



ANIMA MUNDI

Adventures in Wildlife Photography

Issue 27, Year 7 - July 2017

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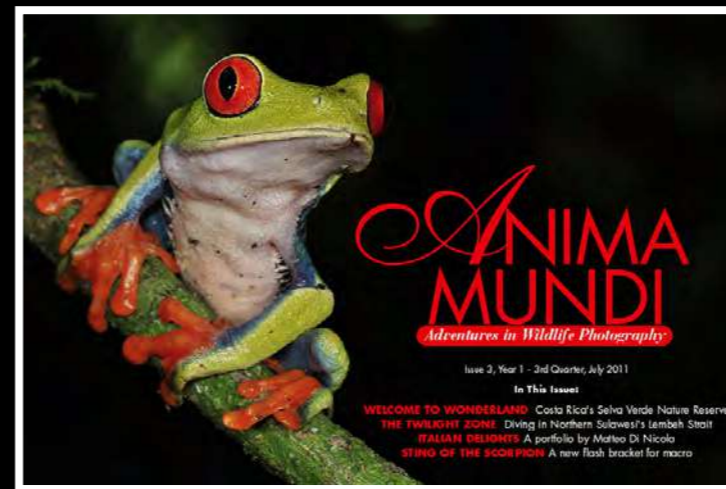
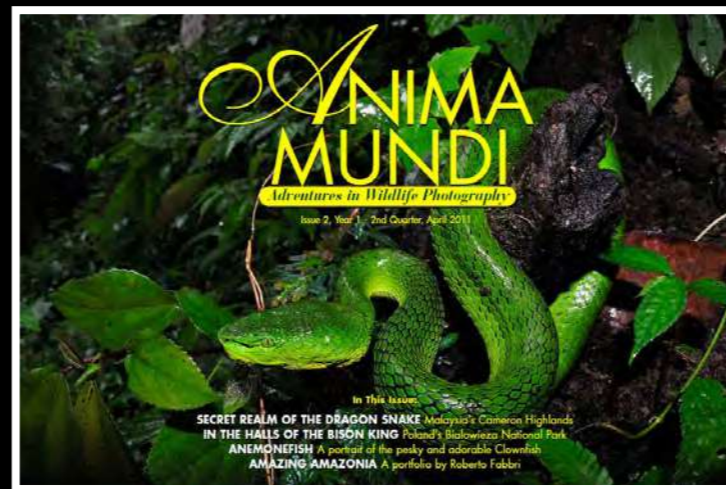
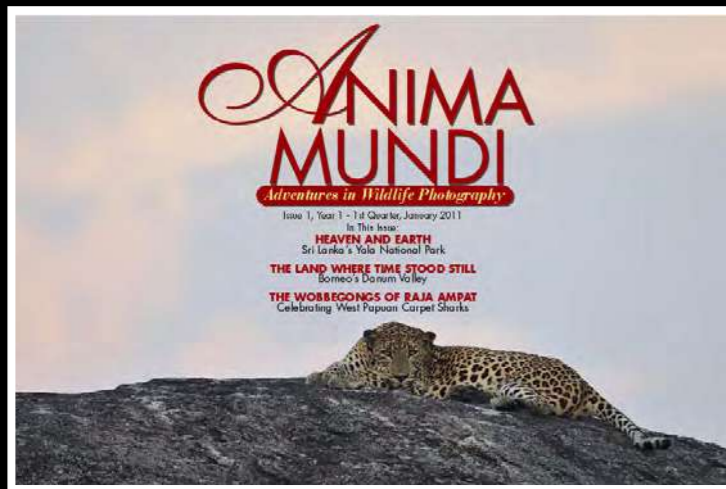
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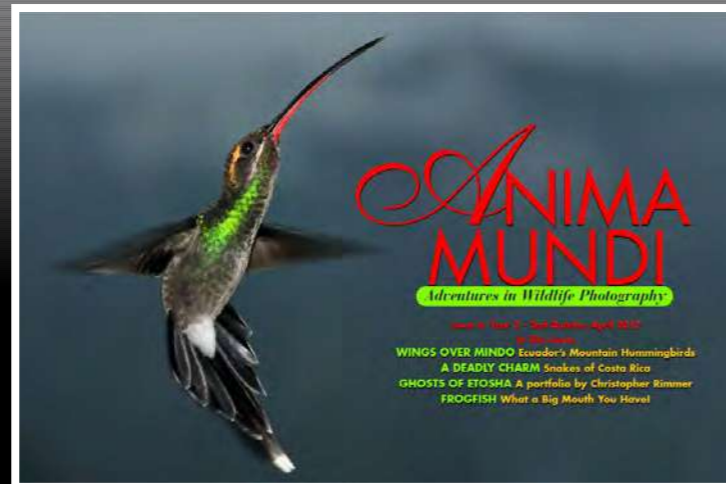


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Dear Andrea & Antonella,

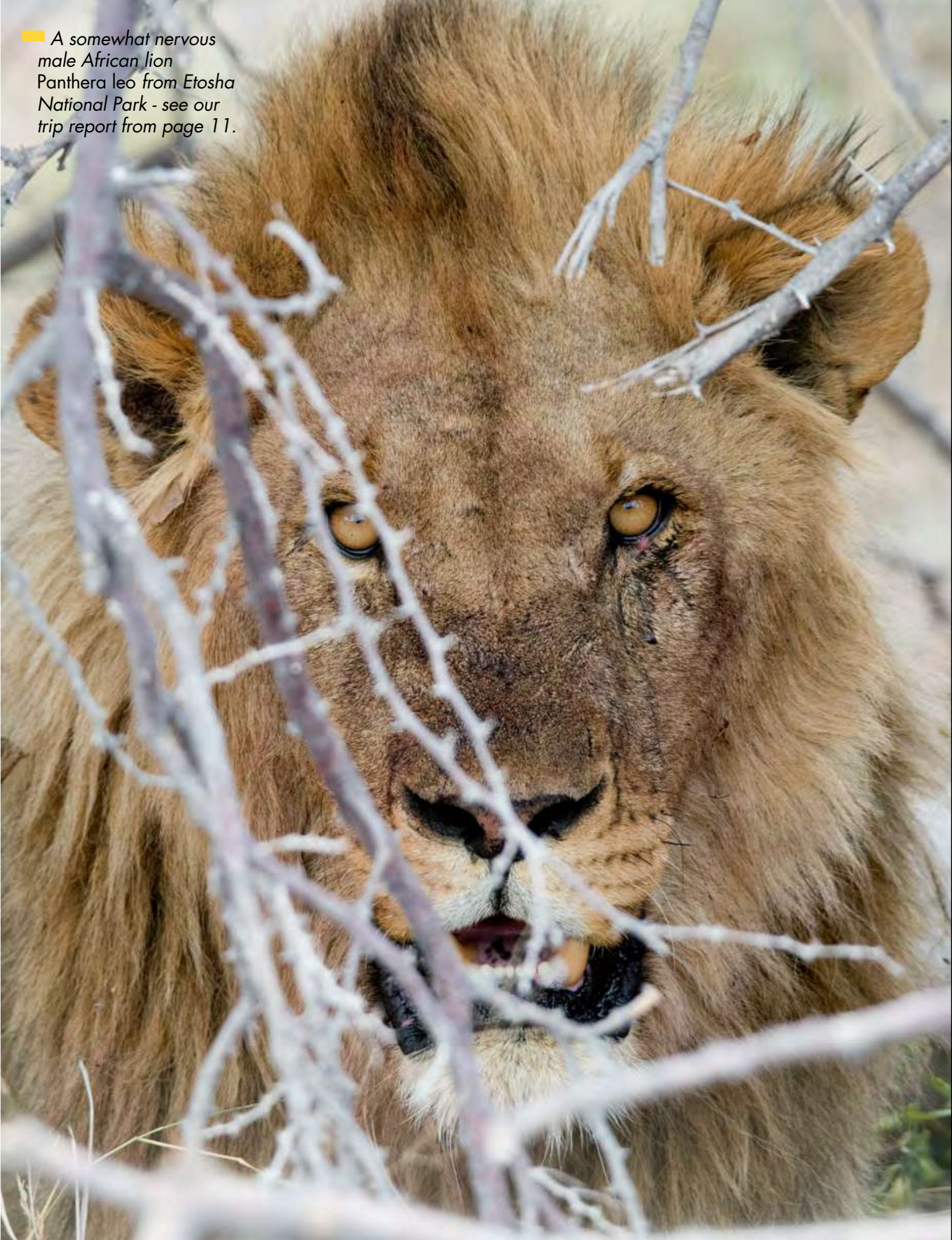
I have just finished reading your latest edition of Anima Mundi and I was inspired to write and say how much I am enjoying your publication and following your adventures. My wife and dive/photo partner Cherie and I were so inspired by your feature on Yala National Park that we booked a Safari with Eco Team and we had a fantastic time. It was exactly as portrayed in your article and we also followed your recommendations for visiting the cultural triangle in Sri Lanka. As we were leading one of our dive tours on a live aboard exploring the Maldives last June, a private side trip to Sri Lanka was clearly not to be passed up due to your information. So, I guess it's good news for you both that others are reading and responding to your work. So, we just wanted to give you some feedback, say hello and wish you all the best with your future adventures. Keep up the great work.

Kevin & Cherie Deacon
Dive 2000
Sydney, Australia.
www.dive2000.com.au

Advertising on ANIMA MUNDI - Adventures in Wildlife Photography means reaching out and getting in personal contact with such people - passionate travellers, dedicated wildlife and nature photographers, world-famous field researchers. All sharing a common bond, all interested in serious, reliable information on wildlife and nature travelling and photographic workshops, trips and equipment. All waiting to hear from you!

Contact us for details at editor@animamundimag.com

■ A somewhat nervous male African lion
Panthera leo from Etosha National Park - see our trip report from page 11.



ANIMA MUNDI

Adventures in Wildlife Photography

Lions, sharks and birds of prey!

Welcome to a new issue of *Anima Mundi - Adventures in Wildlife Photography!* Once again, we have done our best to provide you with a selection of interesting destinations and subjects for your next trips - hopefully you will find something inspiring in the next pages.

We begin on page 4 with a Scoop on Peruvian jaguars - as a destination to watch and photograph these cats Tambopata may not be as famous (yet) as the Brazilian Pantanal, but it certainly delivers thrilling encounters as our friend and contributor Lucas M. Bustamante shows.

From page 11 and on we take you instead to a favorite destination of ours - Namibia's Etosha National Park, a place which every serious wildlife photographer cannot miss visiting at least once in a lifetime. The stunning landscapes and the wildlife one can see there make Etosha a truly unique travel destination.

From page 62 and following you will then find our personal photographic tribute to a subject we have often observed and admired in the forests of South Asia - the majestic Changeable Hawk Eagle, one of the world's most efficient raptors. Bird lovers will love this feature!

Following up from page 75 and following comes Karthikeyan Shanmugasundaram's Personal Portfolio, a selection of wonderful images fully devoted to the macro universe one can observe in South India. We really love the dedication and enthusiasm shown by many young wildlife photographers from India, and we are more than happy to share their passionate work with our readers all over the world.



We finally wrap our current issue from page 90 and following with a spectacular and highly informative tribute to the misunderstood, uniquely magnificent and sadly severely endangered Sand Tiger sharks which our new contributor **Tanya Houppermans** regularly encounters while diving

in the Atlantic ocean off North Carolina - don't miss reading about the details of her forthcoming new underwater photography expedition at <http://www.blueelementsimaging.com/NorthCarolina2017>

And that is all for now - until October with a new issue. In the meantime...

Have a good trip!
Andrea & Antonella Ferrari
www.animamundimag.com

We appreciate your feedback
- constructive criticism, useful
suggestions and interesting
contributions are welcome.
Please drop us a line at
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■ *North Carolina's endangered
Sand tiger sharks Carcharias
taurus - see page 90.*

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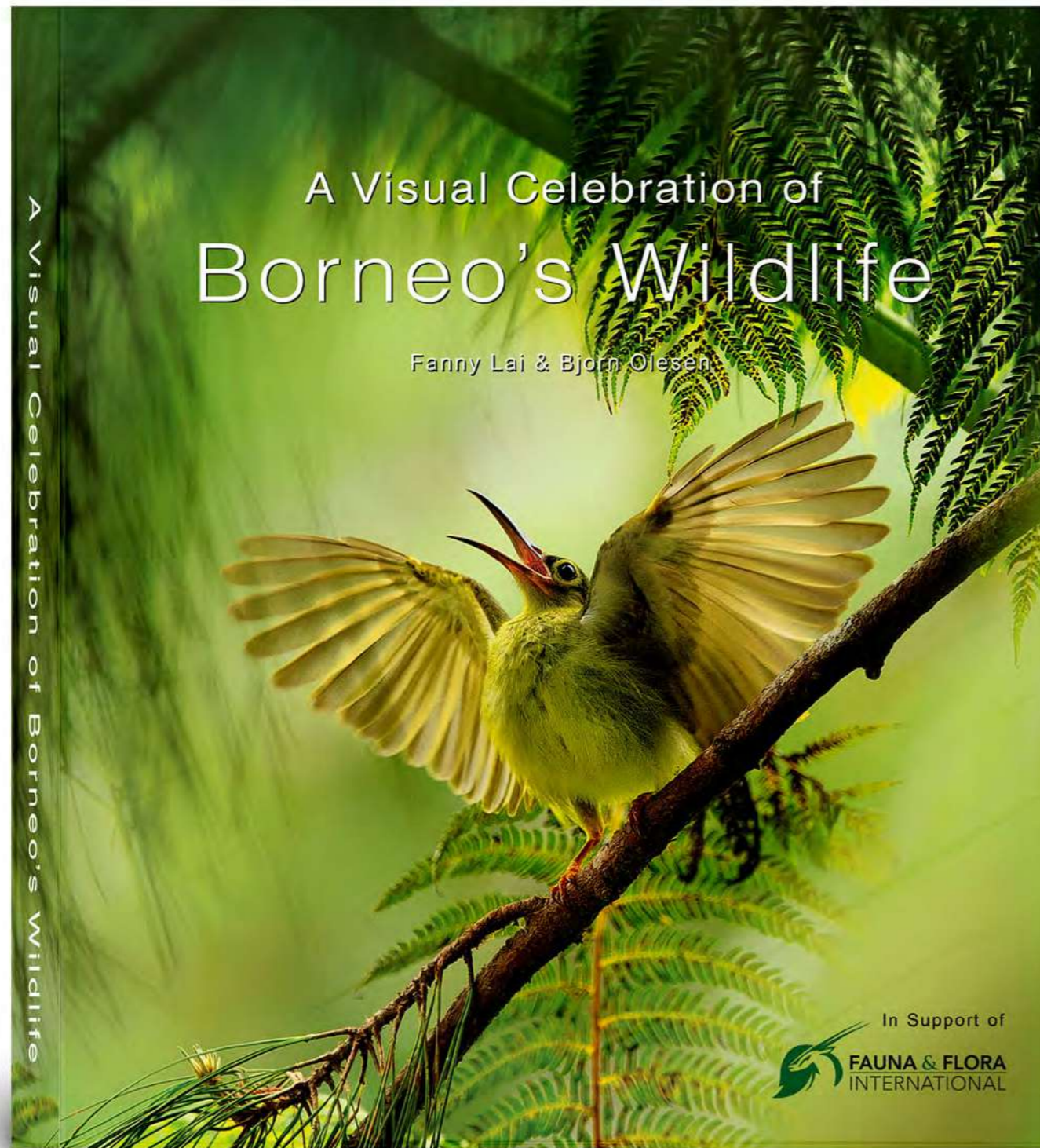
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JAGUARS OF TAMBOPATA **KINGS OF THE RAINFOREST**

LUCAS M. BUSTAMANTE'S ENCOUNTERS WITH
THE AMAZON'S APEX PREDATOR
IN PERU'S WORLD-FAMOUS NATURE RESERVE

■ The jaguar *Panthera onca* is a large and stocky feline in the *Panthera* genus, and is the only extant *Panthera* species native to the Americas. The jaguar is the third-largest feline after the tiger and the lion, and the largest in the Americas.

While dense rainforest is the preferred habitat, jaguars will range across a variety of forested and open terrains. Preferred habitats are usually swamps and wooded regions, but jaguars also live in scrublands and deserts. The jaguar is notable, along with the tiger, as a feline that enjoys swimming.



TEXT AND PHOTOS
BY LUCAS M. BUSTAMANTE
www.tropicalherping.com

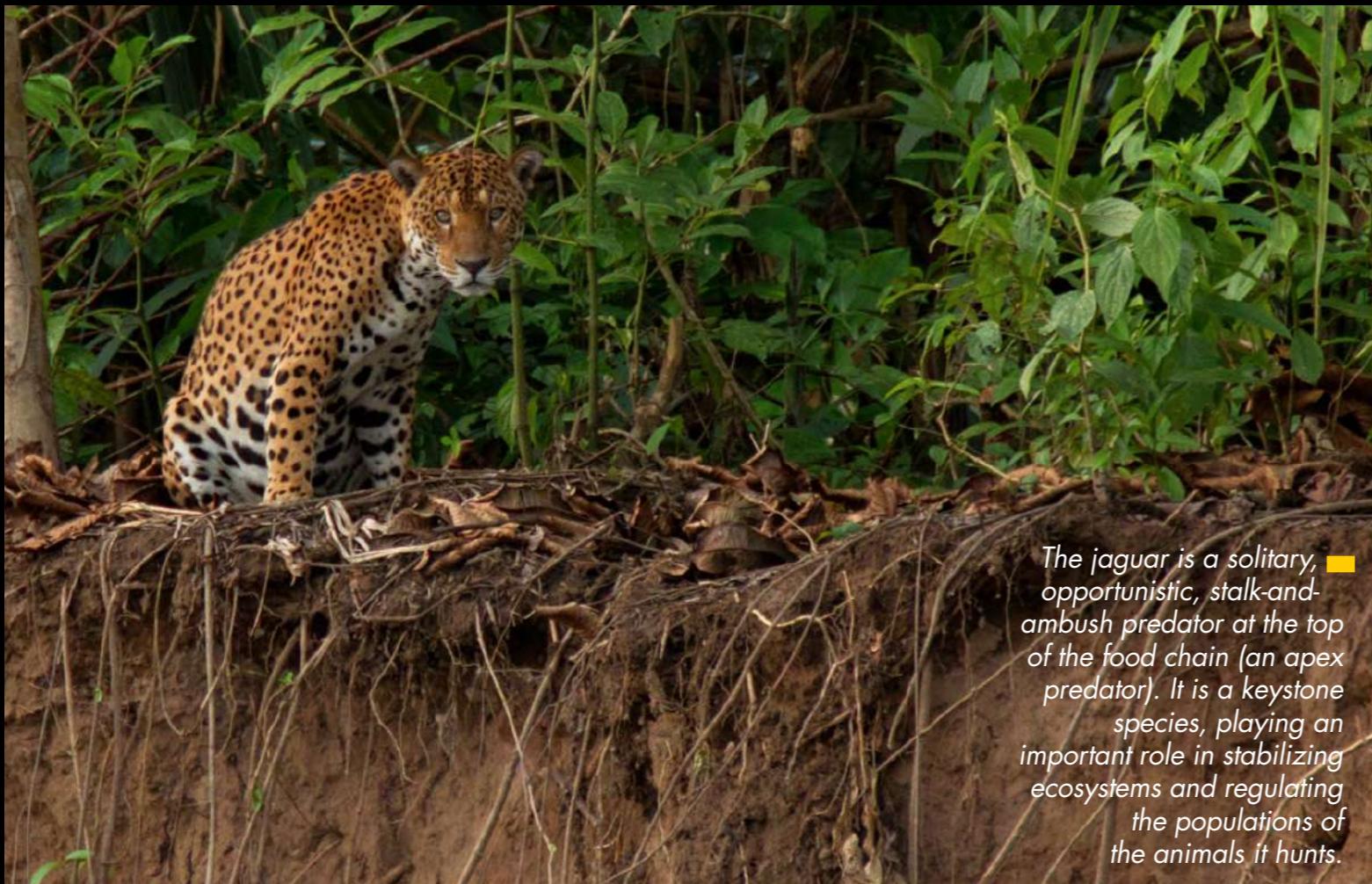
It was 4: 30 in the morning, and the alarm started ringing! Time to begin another day by boat looking for jaguars along the Tambopata River. We started at 05h00 until almost 14h00, a very long day to say the least. So far I had not been successful during my visit to the Tambopata Research Center in the Peruvian Amazon, a place with one of the highest sightings of jaguars in South America (nearly 20% approximately along the river shore). I woke up, and Pedro, our local guide, started screaming furiously that I was late and would miss the boat. I took all my gear with me, and then I realized that I had forgotten the memory card of my camera in the room. After I grabbed it, I started to run to the beach, when I suddenly noticed a jaguar

footprint in the middle of the trail. I walked ten more meters...and saw my guide and the boatman lying behind a big log, looking at something hidden at the forest edge, just off the main harbor of the lodge, in front of the canoes. There it was! A cat - asleep, it wagged his tail and then looked at us with all the confidence in the world, knowing well who is the king of the rainforest. The only thing missing was the smoke from my camera! Everybody talks about the Brazilian Pantanal as the favorite place to find and photograph wild jaguars. It certainly is... But the advantage of Tambopata is that this location offers you encounters with the world's third largest cat as a real adventure, which you never know how will end. Additionally, encountering them in Tambopata it is a much

more personalized experience. I have visited these Peruvian rainforests many times, two of which I spent looking for jaguars. All in all, I've succeeded in finding four jaguars and photographing all of them. Not to mention the encounters with two pumas and an ocelot, which appeared while I was looking for the jaguar. Conclusion: it is high time to diversify the places to search for big cats in South America. Moreover, surely other varieties of large mammals, dozens of primates, hundreds of birds and thousands of macro models will make your journey pass in the blink of an eye. And if you need more to convince yourself, just check the two articles *Anima Mundi - Adventures in Wildlife Photography* has devoted in the past to Tambopata [here](#) and [here](#).

■ The jaguar is a near-threatened species and its numbers are declining. Threats include loss and fragmentation of habitat. While international trade in jaguars or their parts is prohibited, the cat is still frequently killed by humans, particularly in conflicts with ranchers and farmers.



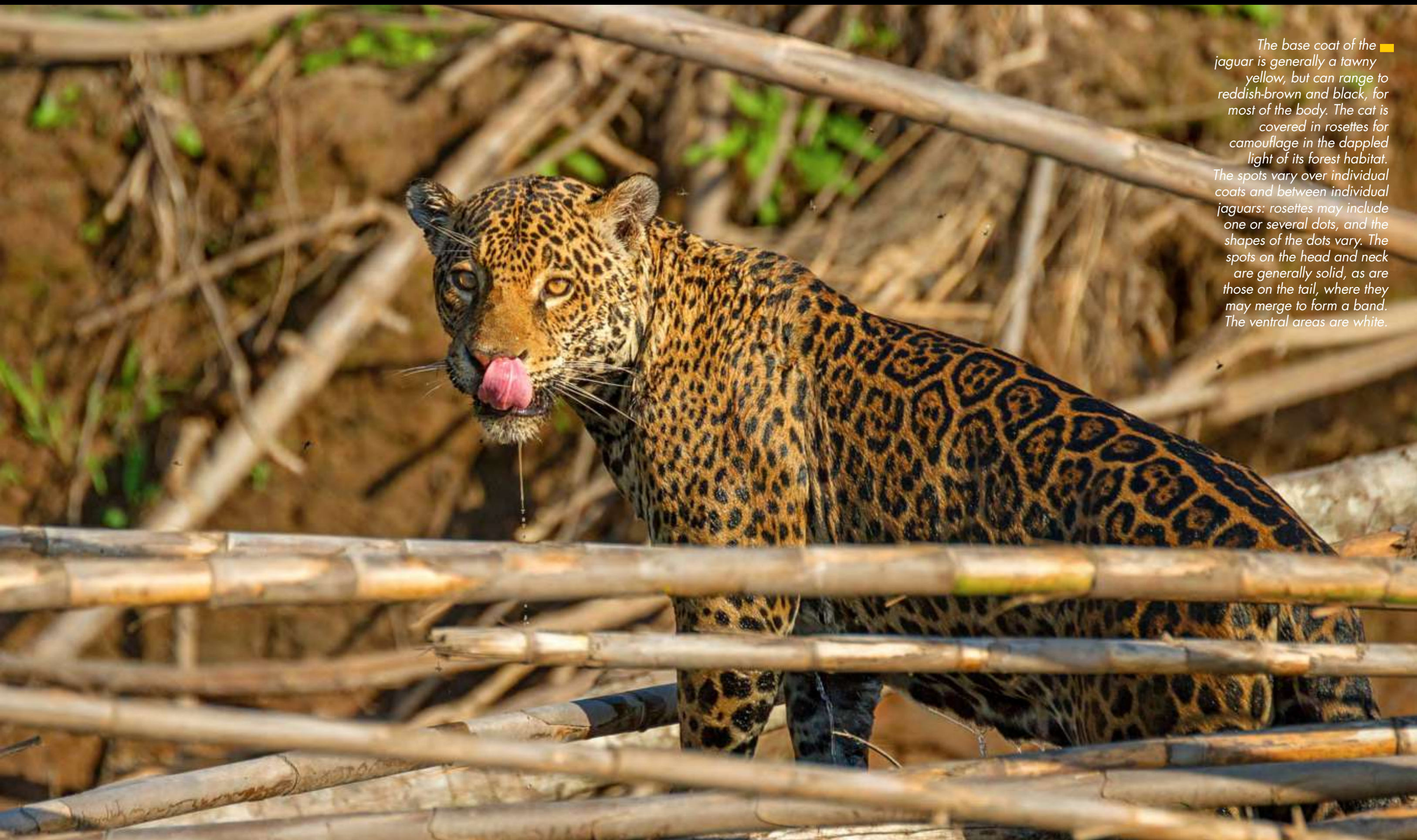


The jaguar is a solitary, opportunistic, stalk-and-ambush predator at the top of the food chain (an apex predator). It is a keystone species, playing an important role in stabilizing ecosystems and regulating the populations of the animals it hunts.



■ A short and stocky limb structure makes jaguars adept at climbing, crawling, and swimming. The head is robust and the jaw extremely powerful, with the third highest bite force of all felids, after the tiger and lion.





The base coat of the jaguar is generally a tawny yellow, but can range to reddish-brown and black, for most of the body. The cat is covered in rosettes for camouflage in the dappled light of its forest habitat. The spots vary over individual coats and between individual jaguars: rosettes may include one or several dots, and the shapes of the dots vary. The spots on the head and neck are generally solid, as are those on the tail, where they may merge to form a band. The ventral areas are white.



Like all cats, the jaguar is an obligate carnivore, feeding only on meat. It is an opportunistic hunter and its diet encompasses at least 87 species. Jaguars can take virtually any terrestrial or riparian vertebrate found in Central or South America, with a preference for large prey.



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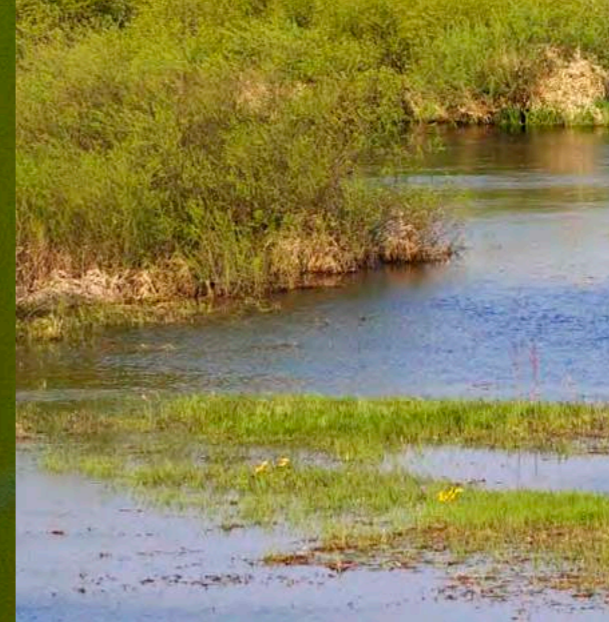


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ETOSHA NATIONAL PARK - THE DRY SEASON

THE GREAT THIRST

Exploring Namibia's legendary wildlife photography destination during its harshest and most demanding time

An endless expanse of dusty white rocks under an impossibly blue sky

A typical Etosha landscape during the dry season. On the opening spread, a lioness Panthera leo waits for thirsty Springbok Antidorcas marsupialis and a lone Wildebeest Connochaetes taurinus to approach a waterhole.



TEXT BY ANDREA FERRARI
PHOTOS BY ANDREA & ANTONELLA FERRARI

*O*ne of Africa's - and indeed the whole world's - most famous protected areas looks at first sight like a parched, blinding landscape from an alien desert world. The bright blue canopy of the sky stretching above, unmarred; the flat, cracked, dust-white soil fading into the trembling horizon, shimmering with scorching heatwaves; bright white, ashy dry bushes and small trees, clawing at nothing with their skeletal branches everywhere. And yet, there is an impossible beauty in this forbidding

landscape, this land of extremes, this bone-dry bowl of sand and dust - the land of the great thirst, Namibia's legendary National Park during the dry and rainless season, Etosha. It lies in northwestern Namibia, spanning over an area of 22,270 square kilometres (8,600 sq mi), and it gets its name from the large Etosha pan (a salty, desert-like featureless depression, almost devoid of animal life), which is almost entirely within the Park. The name Etosha comes from Oshindonga

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Elephants ■
Loxodonta africana
in Etosha get their
unmistakable whitish
shade from the dust
which permeates
everything during
the dry season.



■ Plains or Burchell's zebra *Equus quagga*, formerly *Equus burchellii*, two stags fighting at a waterhole.

word meaning "Great White Place" referring to the Etosha pan, which with its 4,760 square kilometres (1,840 sq mi) covers 23% of the area of the total area of the Etosha National Park. The Park is a spectacular home to hundreds of species of mammals, birds and reptiles, including several threatened and severely endangered species such as the Black rhinoceros *Diceros bicornis*. The Park is located in the Kunene region, and shares boundaries with the regions of Oshana, Oshikoto and Otjozondjupa. Etosha has a savanna desert climate, with an annual mean average temperature of 26 °C.

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Ostrich Struthio camelus and Springbok Antidorca marsupialis in a typically scorchingly hot and arid Etosha landscape.



Etosha is one of the last strongholds of the severely threatened Black rhinoceros or Hook-lipped rhinoceros *Diceros bicornis*. Here a beautiful male sprays a bush with urine to mark its territory.

Male
African lion
Panthera leo.

In winter, the mean low temperatures are in the 6 °C neighborhood, but in summer they can exceed 45 °C. There is a huge daily thermal variation, and in some years, and in some places, there is no rain at all. When there is rain, however, dry rivers quickly come to life. The Park has about 114 mammal species, 340 bird species, 110 reptile species, 16 amphibian species and 1 species of fish (the number however rockets up to 49 species of fish during floods). The salt pans are the most noticeable geological features in the Etosha National Park. The main depression - the legendary Etosha pan - is roughly 130 km (81 mi) long and as wide as 50 km (31 mi) in places. The hypersaline conditions of the pan limit the species that can permanently inhabit the pan itself; occurrences of extremophile micro-organisms are present, which species can tolerate

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Etosha National Park is very rich in bird species. Left, Northern black korhaan *Afrotis afraoides*; top right, Red-billed spurfowl or Red-billed francolin *Pternistis adspersus*; bottom right, Swainson's Francolin *Pternistis swainsonii*.





Two lionesses Panthera leo and their cubs bask in the early morning sun with the endless expanse of the legendary Etosha pan stretching across the horizon in the background.



A beautiful male
Greater Kudu
Tragelaphus
strepsiceros.

the hypersaline conditions. The salt pan is usually dry, but it fills with water briefly in the summer, attracting pelicans and flamingos in particular. During the dry season, winds blowing across the salt pan pick up saline dust and carry it across the country and out over the southern Atlantic. This salt enrichment provides minerals to the soil downwind of the pan, on which some wildlife depends. The dolomite hills on the southern border of the park near the Andersson entrance gate are called

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■ Left, Southern yellow-billed hornbill *Tockus leucomelas*. Right, Cape starling, Red-shouldered glossy-starling or Cape glossy starling *Lamprotornis nitens*.





■ Covered in caked mud and dust, two African elephants *Loxodonta africana* show the stunted, broken tusks carried by the species in Etosha and due to a calcium deficiency in their diet.



Far left,
Pied crow
Corvus albus.
Left, Red
hartebeest
*Alcelaphus
buselaphus
caama*.

Ondundozonananandana, meaning "place where young boy herding cattle went to never return", suggesting a high density of predators like leopards in the hills, giving the mountains its English name of Leopard Hills. The Halali area is also home to dolomite hills within the park, with one hill inside the camp and the nearby Twee Koppies. Western Etosha is also dominated by dolomite hills, which is the only place in the park that has Mountain zebra.

A LITTLE BIT OF HISTORY

Explorers Charles John Andersson and Francis Galton were the first Europeans to record the existence of the Etosha pan on 29 May 1851. The explorers were traveling with Ovambo copper ore traders when they arrived at Omutjamatunda (now known as Namutoni). The Etosha pan was discovered when they traveled north upon leaving Namutoni. In those times areas north of the Etosha pan were inhabited by Ovambo people, while various Otjiherero-speaking groups lived immediately outside the current park boundaries. The areas inside the park close to the Etosha pan had Khoisan-speaking Hai//om people. In 1885, entrepreneur William Worthington Jordan bought a huge tract of land from Ovambo chief

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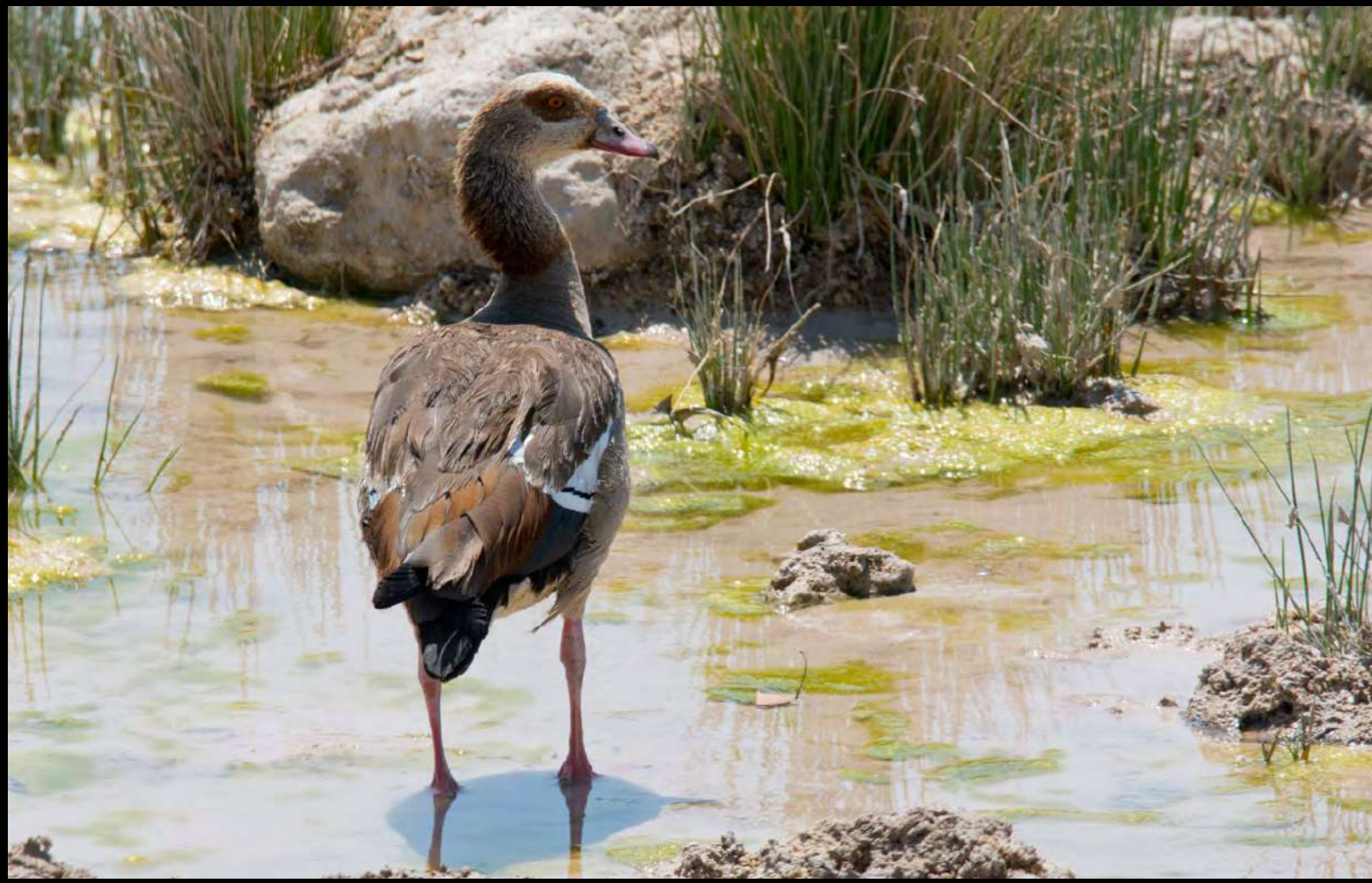
Kori bustard Ardeotis kori, a common and impressive inhabitant of the grassy savanna environment.



■ *At the apex of the dry season in Etosha the waterholes are where the action is. Here a lioness Panthera leo, a lone Black-backed jackal Canis mesomelas and a herd of Springbok Antidorcas marsupialis nervously share the access to water for a few precious minutes.*



■ Top left, Red-billed teal
Anas erythrorhynchos;
top right, Sociable weaver
Philetairus socius.
Bottom left, Egyptian goose
Alopochen aegyptiacus;
bottom right, Blacksmith lapwing
or Blacksmith plover
Vanellus armatus.





A female African lion ■
Panthera leo - still bloodied
from her previous night
feeding - clearly shows her
displeasure at being
approached.

Two bone-white African elephants *Loxodonta africana* feed on dry grass under a sullen grey sky - a squall is approaching.

Bone-white giants standing in a surrealistic endless landscape





■ Top left, European bee-eater *Merops apiaster*, a seasonal migrant; top right, Spotted hyena *Crocuta crocuta*. Bottom left, Southern Pale chanting goshawk *Melierax canorus*; bottom right, Steenbok *Raphicerus campestris*.



■ The graceful Southern Pale chanting goshawk *Melierax canorus* is one of Etosha's most commonly seen raptors.

Kambonde. The land spanned nearly 170 kilometres (110 mi) from Okaukuejo in the west to Fischer's Pan in the east. The price for the land was £300 sterling, paid for by 25 firearms, one salted horse and a cask of brandy. Dorstland Trekkers first traveled through the park between 1876 and 1879 on their way to Angola. The trekkers returned in 1885 and settled on 2,500-hectare (6,200-acre) farms given to them at no charge by Jordan. The trekkers named the area Upingtonia after the Prime Minister of the Cape Colony. The settlement had to be abandoned in 1886 after clashes with the Hai ||om and defeat by Chief Nehale Mpingana. The German Reich ordered troops to occupy the Okaukuejo, Namutoni and Sesfontein in 1886 in order to kill migrating wildlife to stop spread of rinderpest to cattle. A fort was built by the German cavalry in 1889 at the site of the Namutoni spring. On 28 January 1904, 500 men under Nehale Mpingana attacked Imperial Germany's Schutztruppe at Fort Namutoni and completely destroyed it, driving out the colonial forces and

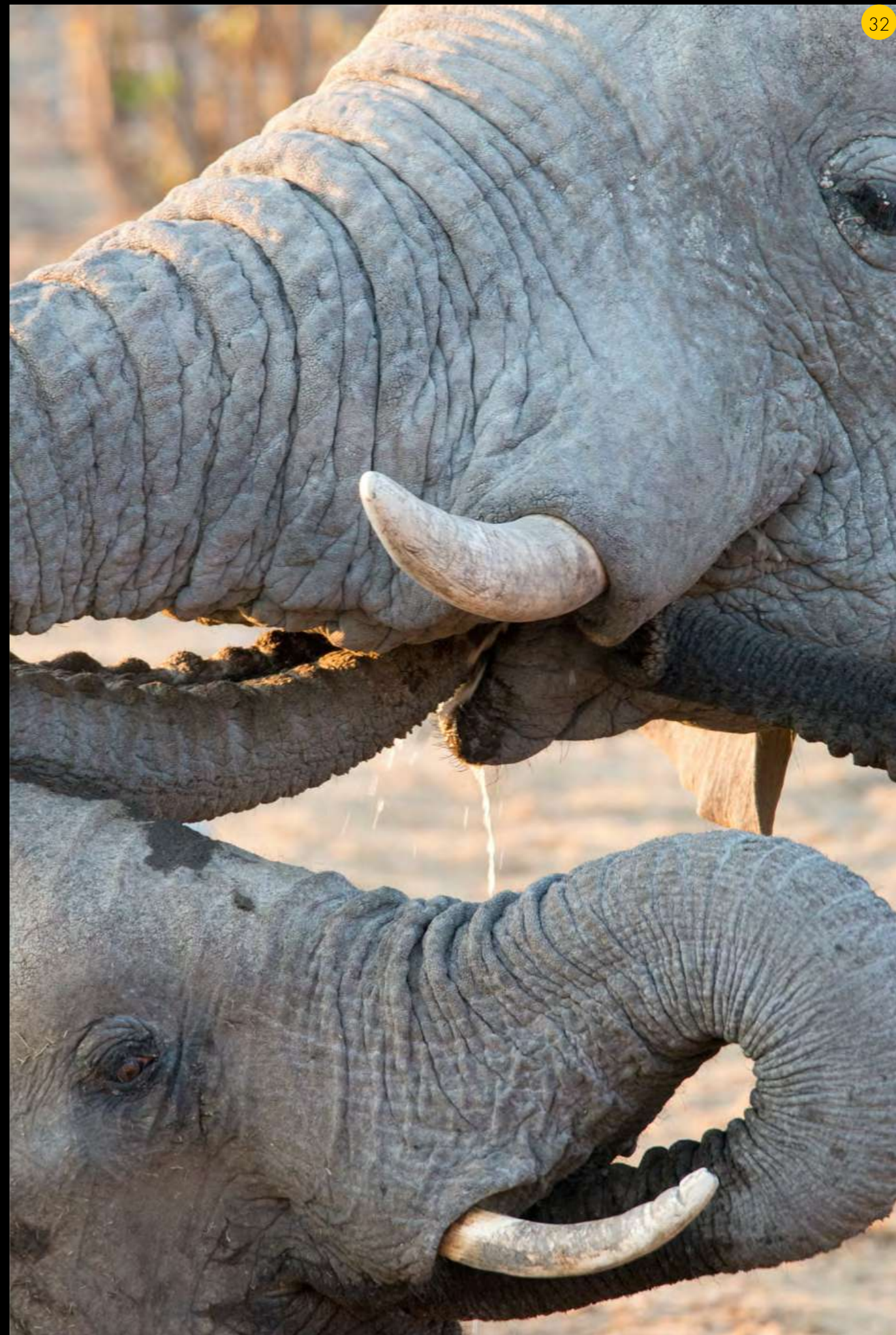


African elephant
Loxodonta africana.

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■ The “white” elephants of Etosha are desperately dependant on water during the dry season, and will often approach waterholes at a joyful trot, with young ones especially charged with expectation.



An overcast sky -
a welcome harbinger
of the approaching
rainy season - casts
its dramatic shadow
over the arid,
parched plains
of Etosha.





■ Left, a female Angolan or Namibian giraffe *Giraffa camelopardalis angolensis* with her day-old baby; right, Greater Kudu *Tragelaphus strepsiceros* and Impala *Aepyceros melampus*.



■ A roving troop of
Banded mongoose
Mungos mungo.

taking over their horses and cattle. The fort was rebuilt and troops stationed once again when the area was declared a game reserve in 1907; Lieutenant Adolf Fischer of Fort Namutoni then became its first "game warden". The Park was proclaimed a game reserve on March 22, 1907 in Ordinance 88 by the Governor of German South West Africa, Dr. Friedrich von Lindequist. It was designated as Wildschutzgebiet Nr. 2 which means Game Reserve Number 2, in numerical order after West Caprivi (Game Reserve No. 1) and preceding Namib Game Reserve (No. 3). In 1958, Game Reserve No. 2 became Etosha Game Park and was finally elevated to status of National Park in 1967 by an Act of Parliament of the Republic of South Africa, which then administered South-West Africa.

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Top left, Springbok ■
Antidorcas marsupialis;
top right,
Wildebeest
Connochaetes taurinus.
Bottom left, Black-
backed jackal
Canis mesomelas;
bottom right, Puff adder
Bitis arietans.



*A faraway sound of thunder
heralds the coming of the rains*

An overcast sky carrying rain-laden, dark clouds looms over the arid landscape of Etosha National Park as the dry season comes to an end.



Plains or Burchell's zebra *Equus quagga*, formerly *Equus burchellii*, in the first rain of the season; right, a stunning adult male Greater Kudu *Tragelaphus strepsiceros*.





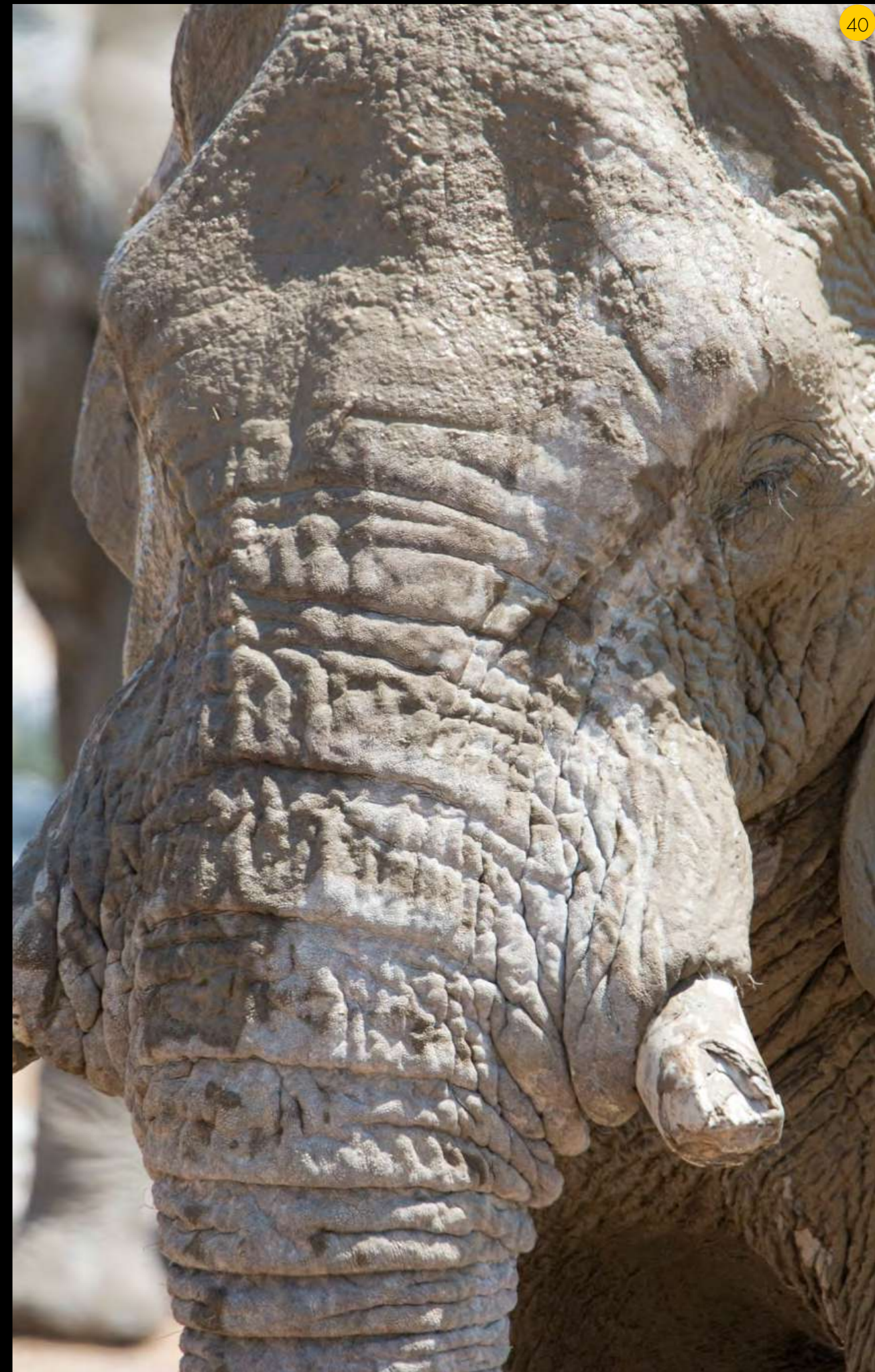
African elephants
Loxodonta africana
congregate
at waterholes
in the day's fading
light at sunset.



Left, two female African lion *Panthera leo* in the midday heat; right, the dust-caked countenance - note the typically stunted, splintered tusks - of an Etosha African elephant *Loxodonta africana*.

AN AFRICAN EDEN FOR WILDLIFE PHOTOGRAPHY

Simply put, as a wildlife photography destination Etosha is unique. During the dry season its landscape offers spectacular chromatic contrasts, with its endless emptiness being a main asset, the lack of water forcing wildlife to crowd all day long - but especially during early morning and in the evening - at the waterholes which dot the savanna, mostly now artificial but quite unobtrusive. Spending a few hours at each in patient wait will always prove exceedingly productive, as interactions between predator and prey often occur. Accommodation and roads are excellent, and the only difficulty is that one has to basically book one year in advance given the reduced capacity of the camps (another great plus - one can drive for hours without meeting another soul!). And yet, Etosha has a few more surprises up its sleeve - we have visited it during the wet season too (something which very few people do) and that will be the subject of another, future feature on it. You'll be surprised! ●



■ Plains or Burchell's zebra *Equus quagga*, formerly *Equus burchellii*, quench their thirst at a waterhole.



Gemsbok *Oryx gazella* and Plains or Burchell's zebra *Equus quagga*.

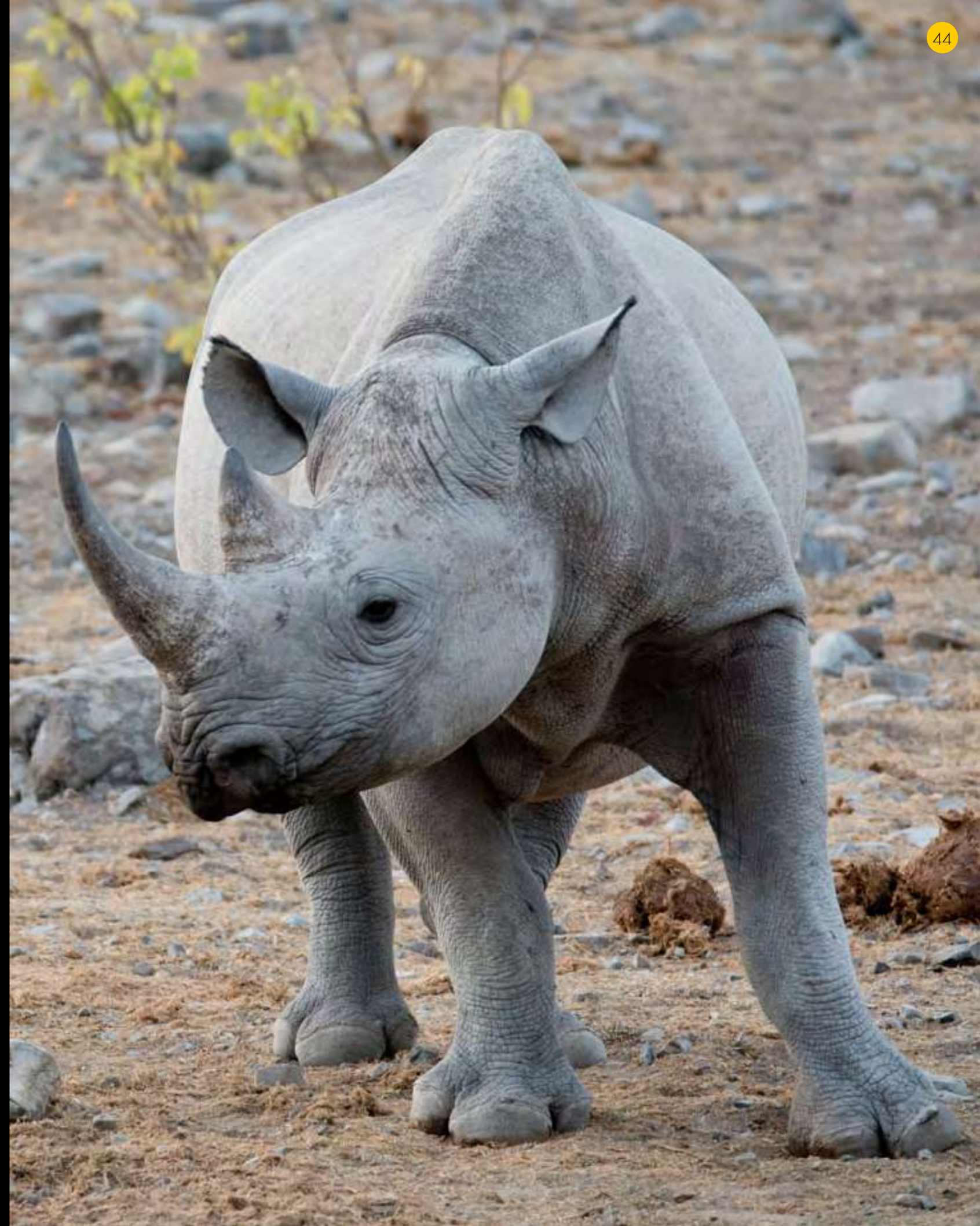


Bathed in the golden light of the coming sunset, a herd of thirsty African elephant *Loxodonta africana* hurriedly approaches Halai's waterhole.



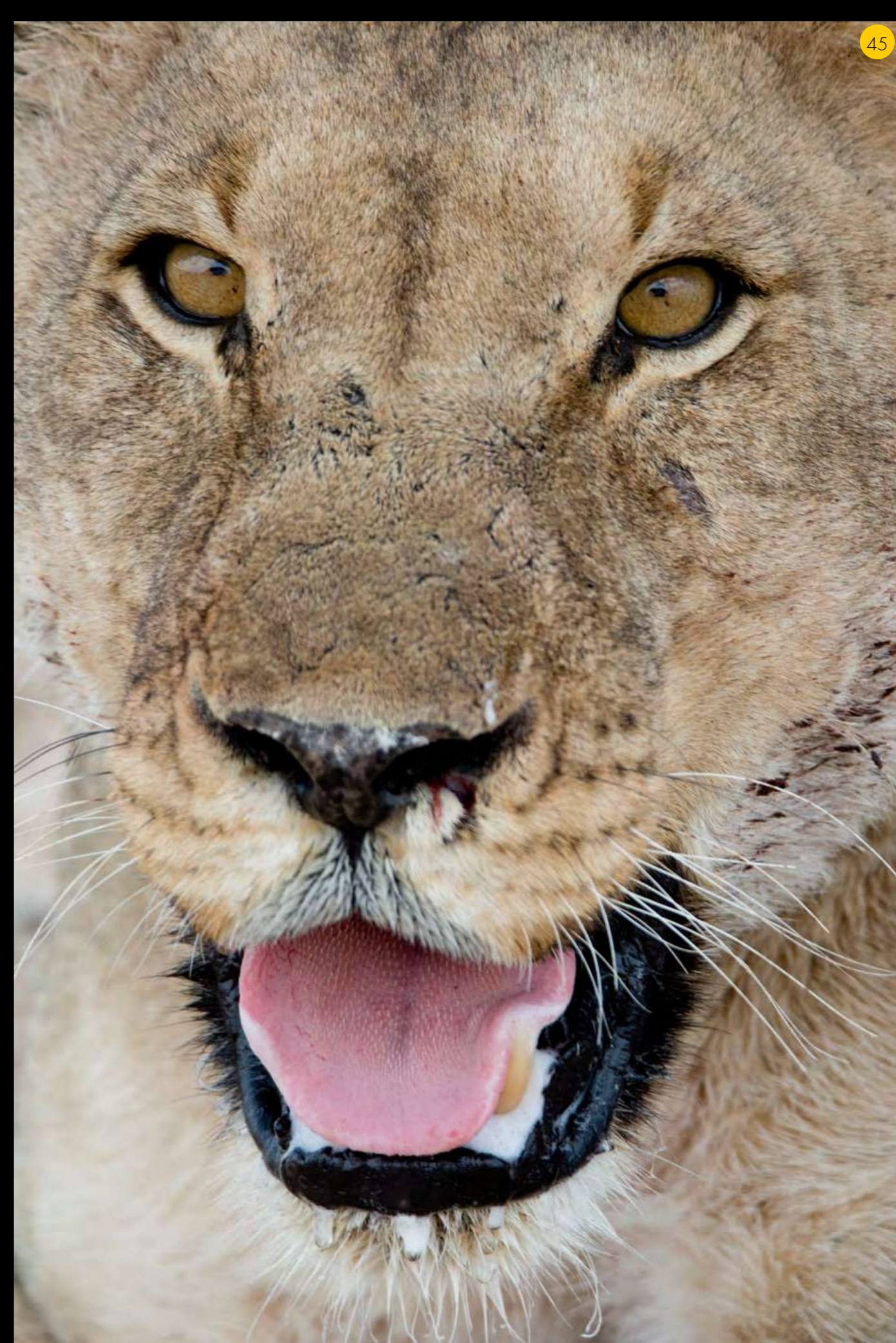


■ *Left, African elephant
Loxodonta
africana; right, the
severely threatened
Black rhinoceros
Diceros bicornis.*





■ *Left, African elephant
Loxodonta
africana at one
of Etosha's
waterholes;
right, close-up
portrait of an
African lion
Panthera leo.*



A rare lighter moment in the sun-baked plains of Etosha



■ Elephants love to play in frolick in water wherever it is available.

*Etosha National Park at its
dry-season best - parched
plains, endless skies, a lone
lioness, a herd of Springbok
and a dust devil twisting
silently on the horizon.*





■ *Two Black rhinos
Dicerus bicornis -
threatened
with man-made
extinction all over
their range in
Africa - get their
evening drink at
Halali's waterhole.*



A group of well-fed female African lion Panthera leo relax in the shade after having feasted on a unfortunate zebra the night before.

A group of Plains or ■
Burchell's zebra
Equus quagga
run and jostle
at a waterhole.





■ *Left, rainbow over the Etosha plains after a late afternoon drizzle; right, two female African lion Panthera leo and their cubs sit by the edge of the endless Etosha pan.*

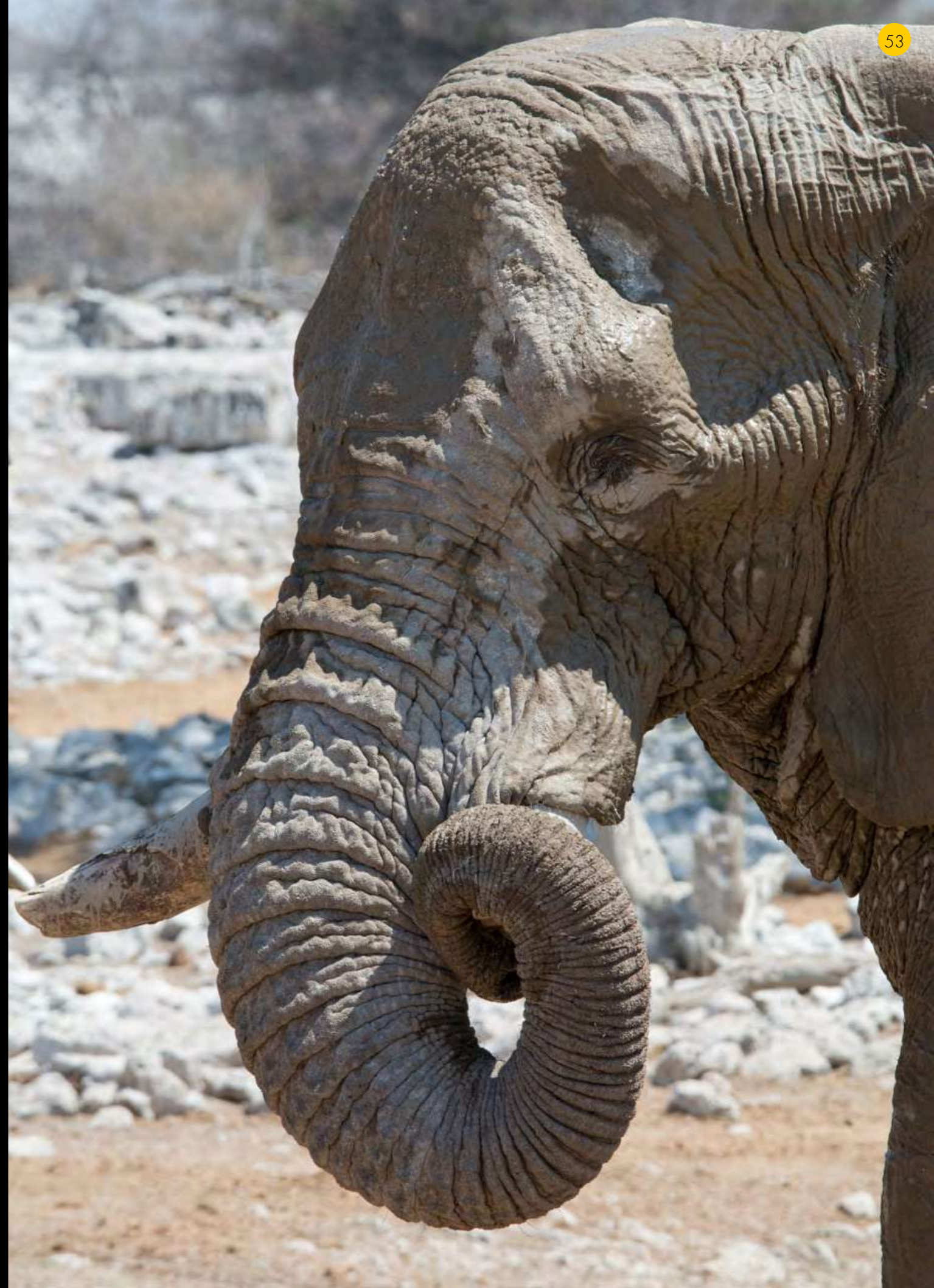




A herd of Springbok ■
Antidorca marsupialis keep
a wary eye on a prowling
lioness *Panthera leo*.
This female is either pregnant
or well fed from
the previous night.



Left, Red hartebeest *Alcelaphus buselaphus caama*; right, African elephant *Loxodonta africana*.





Angolan ■
or Namibian giraffe
Giraffa camelopardalis
angolensis drinking at a
pool in the typical spread-
legged posture.

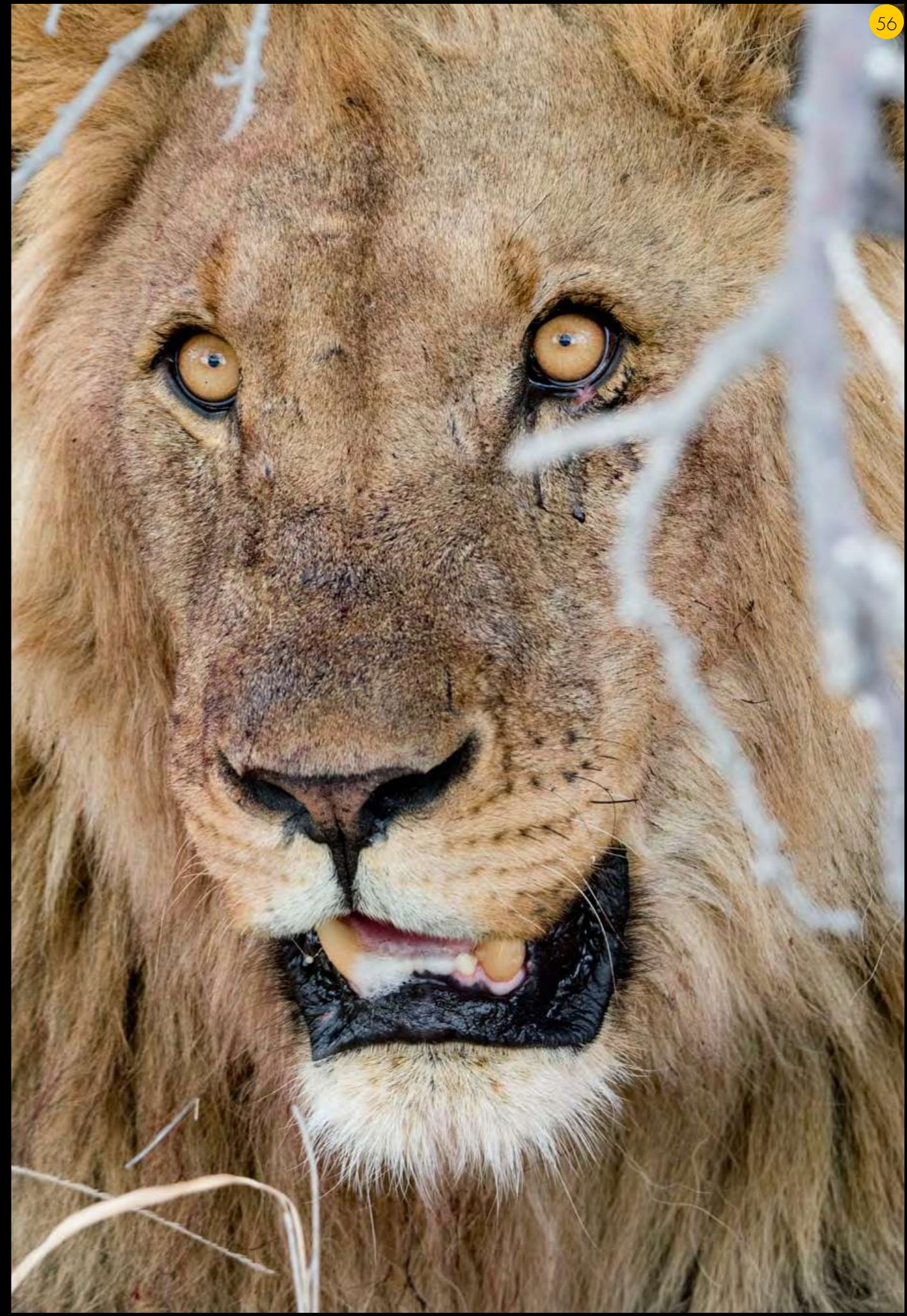
Twilight - a brief time of truces for survival's sake



*A belligerent Black rhinoceros *Diceros bicornis* as it approaches Halali's waterhole at dusk.*



Left, Plains or Burchell's zebra *Equus quagga*; right, portrait of a male African lion *Panthera leo*.





A Black rhinoceros *Diceros* ■ *bicornis* at dusk at Halali's camp waterhole. Etosha's harsh light and parched environment offer interesting opportunities for black-and-white photography.

Left, a trio
of Gemsbok
Oryx gazella; center,
Kori bustard
Ardeotis kori; right,
male Greater Kudu
Tragelaphus strepsiceros.



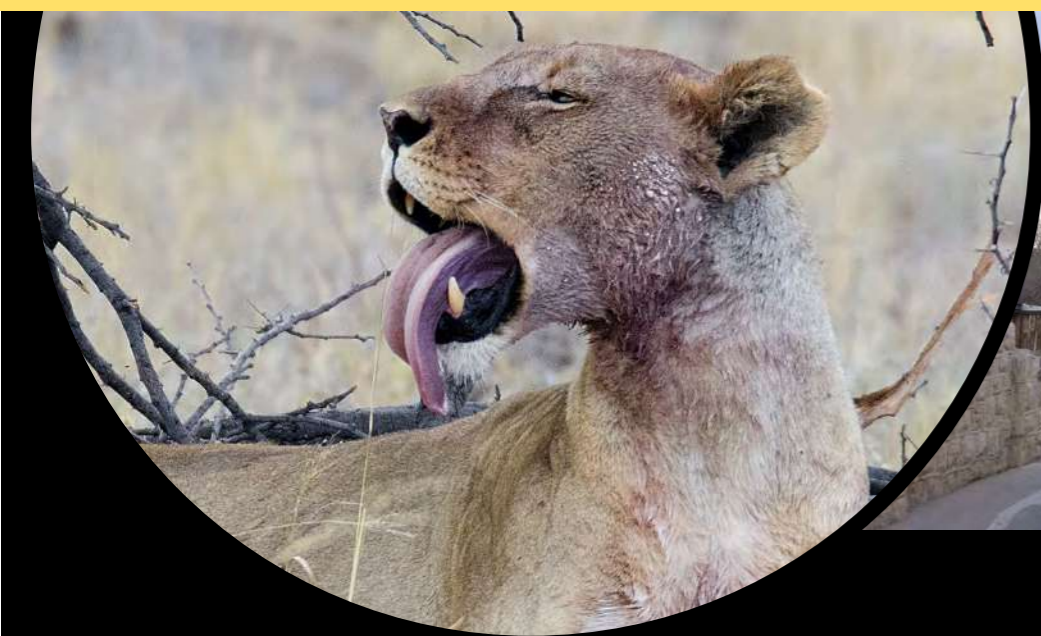
■ A herd of African elephant *Loxodonta africana* gathers for a drink at Halali's waterhole after sunset. Waterholes at the camps in Etosha are often lit all night long with floodlights, offering unique opportunities to witness interaction among - and the behavior of - many visiting animals.



At-a-glance travel guide



COUNTRY OF DESTINATION: **NAMIBIA**



USEFUL TIPS FOR YOUR EXPEDITION

Some simple, common sense, field-tested advice and information to make the best out of your trip and avoid hassles, worries and problems

ROUTE: Your international flight will land in Windhoek Hosea Kutako International Airport, 45 kms from the capital itself. Namibia can be reached by direct flight with a few airlines or via South Africa. The airport is small, clean and very efficient.

MEANS OF TRANSPORT: Etosha can be easily reached in one long day's driving from Windhoek. Namibia has a good network of tarmac highways and can be easily visited self-driving a rented vehicle, but this solution however has its drawbacks - enormous distances, tyre-damaging coarse gravel stretches and above all the need to be absolutely self-sufficient. We are convinced that for productive

wildlife photography it is much better to employ a professional guide and we cannot recommend enough our personal friend **Phillip Conradie of Africa Windows Safaris** - a very reliable and experienced professional with a special knack for animals and a wonderful person to travel with.

CURRENCY: Namibian dollar (NAD) and South African Rand (ZAR), with Euros being accepted in most upscale lodges. It is advisable to change a reasonable amount of currency upon arrival.

ACCOMODATION: Etosha NP offers a wide choice of accomodation, from budget to luxurious,

usually very clean and very efficiently managed. We can safely recommend staying at **Halali, Okaukuejo** and **Namutoni**, which is where we usually stay. These are beautiful camps, with very pleasant cottages, good-to-excellent food being served in the attached restaurants and fantastic opportunities for wildlife sightings right on the lodge grounds.

FOOD: Namibia is no place for vegetarians, even if it is the only African country where we feel absolutely safe having fresh raw vegetables and salads. An abundance of exotic meats and free-ranging game provides mouth-watering charcoal-grilled steaks of zebra, springbok, kudu and eland,

By any standards surely one of Africa's most spectacular Parks



which are really to be tasted - even by those usually avoiding red meat (like us). Given the blistering heat, you'll love having a Rock Shandy, a refreshing drink of 1/2 a bottle of lemonade, 1/2 a bottle of soda water and a few drops of Angostura bitters.

LANGUAGE: English and German are widely spoken everywhere. Don't even hope of speaking or understanding Khoisan, the Bushmen's unique tongue-clicking language...

WORRIES: None as long as you follow the lodges and National Parks rules. Namibia is a very safe, visitor-friendly nation, but always remember that wild animals are exactly that - wild, and often dangerous.

HEALTH: A very safe destination, with high medical standards - one of the very few places where we drink tap water without worries.

CLIMATE: When to go? Not an easy question to answer! Partially covered by the Namib Desert, one of the world's driest deserts, Namibia's climate is generally very dry and pleasant - it's fine to visit all year round. Between about December to March some days will be humid and rain may follow, often in localised, afternoon thunderstorms. These are more common in the centre and east of the country, and more unusual in the desert. April and especially May are often lovely months in Namibia. Increasingly dry, with a real freshness in the air, and much greenery in the landscape; at this time the air is clear and largely free from dust. From June to August Namibia cools down and dries out more; nights can become cold, dropping below freezing in some desert areas. As the landscape dries so the game in the north of the country gravitates more to waterholes, and is more easily seen by visitors. By September and October it warms up again; game-

viewing in most areas is at its best, although there's often a lot of dust around and the vegetation has lost its vibrancy. November is a highly variable month. Sometimes the hot, dry weather will continue, at other times the sky will fill with clouds and threaten to rain - but if you're lucky enough to witness the first rains of the season, you'll never forget the drama.

BESIDES: Local tribes and indigenous culture provide much interest, even after the terrible suffering inflicted in the past (1904 -1910) by Kaiser Wilhelm's Imperial Germany. The country's largest ethnic group is the Ovambo (around half the population), with the Kavango, Herero, Damara, and Caprivian peoples all having significant populations. Some of the country's smaller groups of peoples - like the San (or Bushmen) in the east and the very distinctive, red-tinted Himba in the north - still keep to their age-old nomadic or semi-nomadic lifestyles. ●

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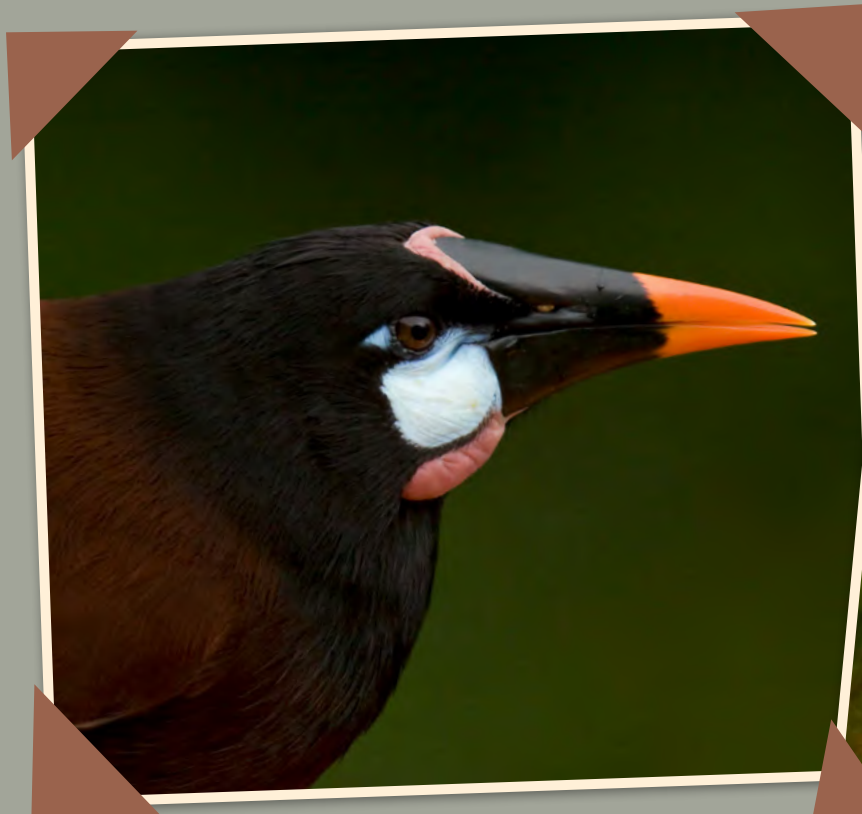
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Beauty of the Beast



THE CHANGEABLE HAWK-EAGLE

**WINGED
TERROR
OF ASIAN
SKIES**

A fierce raptor of forest and open woodland and a favourite subject of wildlife photographers thanks to its stunning looks and widespread distribution



Nisaetus cirrhatus

The Changeable Hawk Eagle or Crested Hawk Eagle *Nisaetus cirrhatus* is a large, ferocious-looking bird of prey species belonging to the family *Accipitridae*. It was formerly placed in the genus *Spizaetus*, but studies pointed to the group being paraphyletic resulting in the Old World members being placed in *Nisaetus* (Hodgson, 1836) and separated from the New World species.

TEXT BY ANDREA FERRARI

PHOTOS BY ANDREA & ANTONELLA FERRARI



Nisaetus cirrhatus

The fierce looks of the Changeable Hawk Eagle make a wonderful photographic subject of it. This is a juvenile.

Changeable (or Crested) Hawk Eagles are large, imposing raptors with varying color morphs and several subspecies that occur in southern and southeast Asia, throughout forested areas. They belong to the family *Accipitridae*, genus *Nisaetus*, species *N. cirrhatus*, further subdivided in the subspecies *andamanensis*, *ceylanensis* (Ceylon Hawk Eagle), *cirrhatus*, *limnaeetus* and *vanheurni*. Genus *Nisaetus* was formerly lumped with *Spizaetus*; however, molecular studies showed Asian hawk eagles to be part of a different lineage than that of New World hawk eagles (*Spizaetus*), and therefore were split into the new genus *Nisaetus*.

Changeable Hawk Eagles reach a length of 57-79 cm with a wingspan of 127-138 cm and a weight of 1.3-1.9 kg, and come in a range of crested, crestless, dimorphic (having a pale and a dark morph), and monomorphic (having only one morph) forms, depending on the subspecies. *N. c. cirrhatus*, the nominate species, has a long crest up to 10-14 cm long and one morph form. *N. c. andamanensis* is smaller, also monomorphic, and has a short crest around 5 cm long. *N. c. ceylanensis* is also small in size, has a single morph form, but its crest is around 10 cm long. *N. c. limnaeetus* is dimorphic with a very short crest 1-3 cm long. *N. c. vanheurni* is the smallest of all the subspecies, has no crest, and is

monomorphic. In general, dark morph Changeable Hawk Eagles have brown wings tipped with black with 4-5 darker bars. The breast and underside are streaked with brown, and the undertail and thighs are thinly barred with white. The floppy crest is long, consisting of around 4 feathers. The chin and throat are white, and the eyes are yellow. The legs are long and feathered, and the long tail has thin bars. Pale morphs - existing only when the bird is dimorphic, such as subspecies *N. c. limnaeetus* - are dark brown from above with pale wing coverts. The head and neck are rufous with some black streaking, and the underside from the chest to the belly and flanks is white to buff with black and dark brown streaks. Changeable Hawk Eagle calls are shrill, repetitive screams. Predictably, they are more vocal during the breeding season. These powerful and impressive birds of prey live in deciduous, semi-evergreen, and logged forest, along with savannah woodland, tea plantations, cultivated regions, and even along the edges of suburban areas, from 0-1,500 meters above sea level, but are known to occupy habitat as high as 2,200 m. Pairs remain in the same territory all year, although they do not hunt together. Changeable Hawk Eagles are found throughout southern and southeast Asia, in India, Sri Lanka, the Andaman Islands, Philippines, Borneo, and the Indonesian islands Sumatra, Java, and the Greater Sundas.



Fierce, powerful raptors, the Changeable Hawk Eagle is the terror of Asian skies - large individuals have been known to attack and kill adult peahens *Pavo cristatus*. Here a Sri Lankan individual *Nisaetus cirrhatus ceylanensis* is tearing to pieces and swallowing a large Bengal monitor it has just killed.

Changeable Hawk Eagles take a range of prey, including birds up the size of peacocks, small mammals, snakes, monitors and lizards. They perch in an exposed location to hunt, usually high up; occasionally they choose someplace lower, such the crown of a tree. They then swoop down to catch their prey on the ground, although birds are sometimes caught in trees.

Breeding displays consist of soaring and calling, although they do not have the elaborate sky dances of some other raptors. The breeding season is from November-May in southern India and January-February in the Himalayan foothills. The nest - a rather large and untidy affair - is 95 cm - 1.05 m across, and 35 cm - 1.2 m deep. It is made of sticks and lined with leaves, and often placed in the fork of a tree. One white, rufous-spotted egg is laid and incubated for 35 - 44 days. Fledging takes 65 - 70 days.

Crested Hawk Eagles are the most widespread and common Asian hawk eagle, but the individual subspecies have much smaller ranges and are under threat from shooting and habitat loss. Subspecies *N. c. andamanensis* may have a range of less than 6,475 km², and *N. c. vanheurni* only 1,600 km². *N. c. ceylanensis* inhabits 65,000 km², however, and *N. c. cirrhatus* and *N. c. limnaeetus* even larger areas. The entire species has been evaluated as Least Concern by BirdLife International. ●



Nisaetus cirrhatus



Brown above, white below with barring on the undersides of the flight feathers and tail; black longitudinal streaks on the throat and chocolate streaks on the breast. Some subspecies have a crest of four feathers, but this is absent in others. The sexes are similar in plumage, but males are smaller than females. The underparts and head of juveniles (left) are whitish or buff with few dark streaks.



Nisaetus cirrhatus

Changeable Hawk Eagles eat mammals, birds, and reptiles. They keep a sharp lookout perched bolt upright on a bough amongst the canopy foliage of some high tree standing near a forest clearing. There, they wait for junglefowl, pheasants, hares, and other small animals coming out into the open. The bird then swoops down forcefully, strikes, and bears the prey away in its talons.



Nisaetus cirrhatus



Changeable Hawk Eagles breed in the Indian subcontinent, mainly in India and Sri Lanka, and from the southeast rim of the Himalaya across Southeast Asia to Indonesia and the Philippines. This is a bird occurring singly (outside mating season) in open woodland, although island forms prefer a higher tree density. It builds a rather untidy, large stick nest in a tree and lays a single egg.



The Changeable Hawk Eagle *Nisaetus cirrhatus* is a medium-large raptor at about 60–72 centimetres (24–28 in) in length with a 127–138 centimetres (50–54 in) wingspan, and a weight ranging from 1.2 to 1.9 kg (2.6 to 4.2 lb). It is a relatively slender eagle of open woodland with some subspecies (especially *N. c. limnaetus*) being dimorphic, giving the name "changeable".



Changeable Hawk Eagles are ferocious predators (the one on the left has killed and partially consumed a juvenile Ibis, the one above has caught and is eating another unidentified large bird), but when perched they are very often mobbed - as can be seen in both images - by several much smaller and quite fearless birds, notably Fantails *Rhipidura* sp.

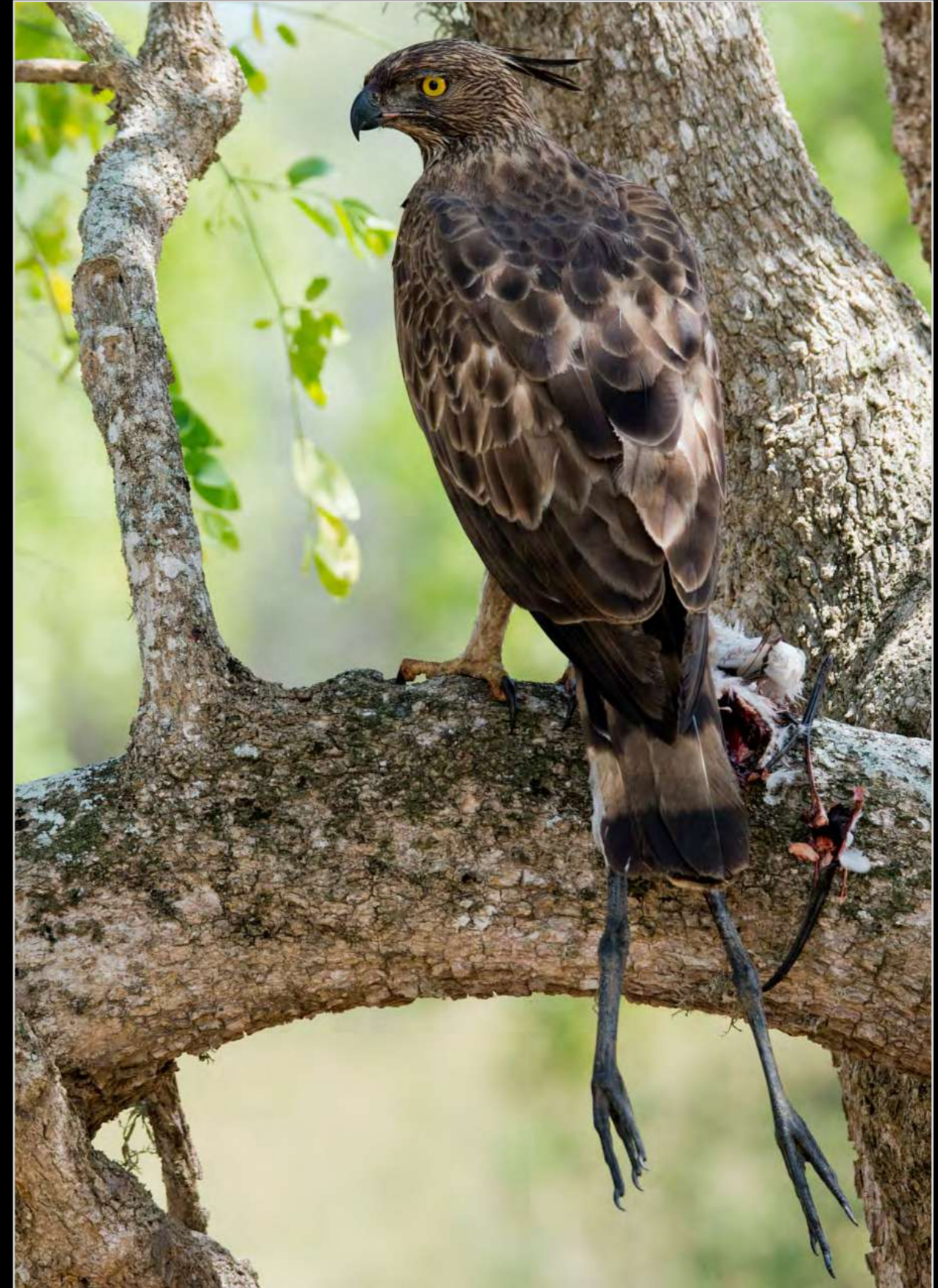


The unmistakable crest, bright yellow eyes and huge hooked beak are easily recognized diagnostic features of the species.



Nisaetus cirrhatus

Like several other large raptors, the Changeable or Crested Hawk Eagle has a distinct “personality” thanks to its piercing yellow eyes, its showy crest and its habit of standing upright on branches. The best place to photograph them - often at relatively close range - is probably Sri Lanka, where the strongly marked subspecies *ceylanensis* can be often admired in several National Parks.



The global population size has not been quantified, but the species is suspected to be declining locally owing to habitat destruction and increased human disturbance. The Crested Hawk Eagle is the most widespread and common Asiatic Hawk Eagle species, but some of the individual subspecies have small ranges and are probably under considerable threat from habitat loss.



Nisaetus cirrhatus

Crested Hawk Eagles are found throughout southern and southeast Asia, in India, Sri Lanka, the Andaman Islands, Philippines, Borneo, and the Indonesian islands Sumatra, Java, and the Greater Sundas. Pairs remain in the same territory all year, although they do not hunt together. They are irruptive or local migrants, and juveniles disperse from their parents' breeding areas.



The wings of this imposing bird of prey are long and parallel-sided, and are held flat in flight, which helps to distinguish this species from the similar Mountain Hawk Eagle. In overhead flight, comparatively rounded wings (upturned at tip), longish tail, white body (spotted with brown) and grey underside of wings (streaked and spotted) are leading pointers for identification. Once perched, however, the species is unmistakable.

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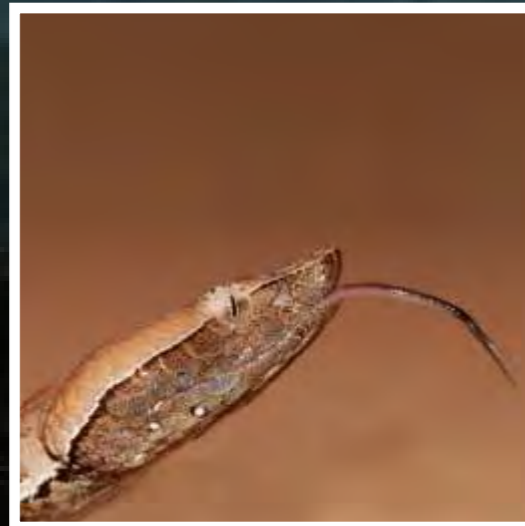
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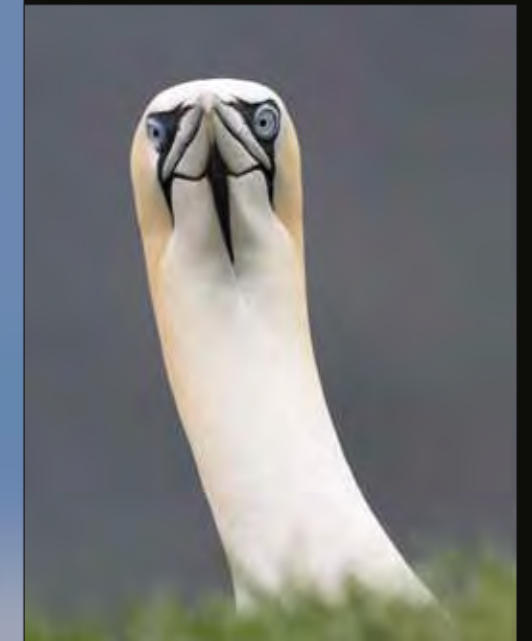
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David Hemmings - President, Nature's Photo Adventures



"My experience was EXCEPTIONAL! The trip exceeded my expectations in all areas. I hoped to get in a position to see owls and couldn't possibly have been happier. It was abundantly clear that David invested significant time and effort prior to the arrival of the group in scouting the area around Quebec and Ontario. He knew exactly where to go to find every species of owl. His knowledge and efforts were very much appreciated by the entire group. My primary objective was just getting in a position to photograph owls and was not expecting much in the way of photographic instruction. I was very pleasantly surprised and was very happy with the instruction. Prior to the trip I had a love/hate relationship with auto focus as it applies to photographing birds in flight. I've struggled with this for years. While I have a lot more to

learn, and need to work at honing my skills, the trip with NPA helped me tremendously in being able to photograph birds in flight. Photographing birds in flight was my main objective. Prior to the trip I was nearly clueless in comparison to my skills after the trip. You can also see from my bird list that I found the trip productive from a birding perspective as well".
Kevin McCarthy, USA

"I recommend NPA workshops! The level of services by workshop leaders was excellent. Quality of photographic instruction was exceptional and they

were always on hand to solve issues that arose, and I had more than my share of equipment issues. Quality of wildlife provided was good and I was amazed at how easily the subjects accepted new setups provided. Locations visited were right on for the species targeted. My most memorable moment was using the flash setups the first time and capturing an image of the Swordbill Hummingbird. I feel that my level of photography has improved with the custom functions that were set up on my camera for me and the resulting images that I obtained. Overall experience and

expectations were achieved and we were fortunate to have a very compatible group on our tour, which made it very enjoyable. This was my first workshop and I would recommend them to friends".
Rosemary Harris, Canada

"Great trip, great experience and great workshop leader. Great opportunity for capturing images of magnificent and uncommon (in southern USA) birds. Organizers contribute to great group dynamics and superb attitude. Cool techniques".
Eric Grossman, USA



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South Indian microworlds

A wonderful set of macro images from the forests and meadows of South India by a young and passionate amateur photographer with the soul of a poet

*Karthikeyan Shanmugasundaram -
A Wildlife Photographer
in His Own Words*

Hello, I am Karthikeyan Shanmugasundaram. I was born in Tamil Nadu, India, a passionate nature and macro photographer doing photography for the past six years. Every micro second there are so many incredible and amazing things happening around us and we are unable to notice those moments because we ignore those tiny worlds and forget how important they are, that without insects we would be unable to survive...My goal is to capture and explore those amazing tiny natural world moments as much as possible and showcase their amazing beauty to this world. My desire is to photograph all the species of Jumping spiders throughout India...



Potter wasps

Potter wasps having a conversation before sleep. I wanted to capture their last active moment before the end of the day.

Canon Eos 550d
Sigma 105mm
f5, 0.6
ISO 200

**Praying
mantis**

On a cloudy morning I saw this Praying mantis walking on a leaf. The sun looked like a fake moon. I just managed to capture this unique moment.

Canon 5d mark3
Sigma 105mm
f2.8, 1/1600
ISO 160





Spider with eggs

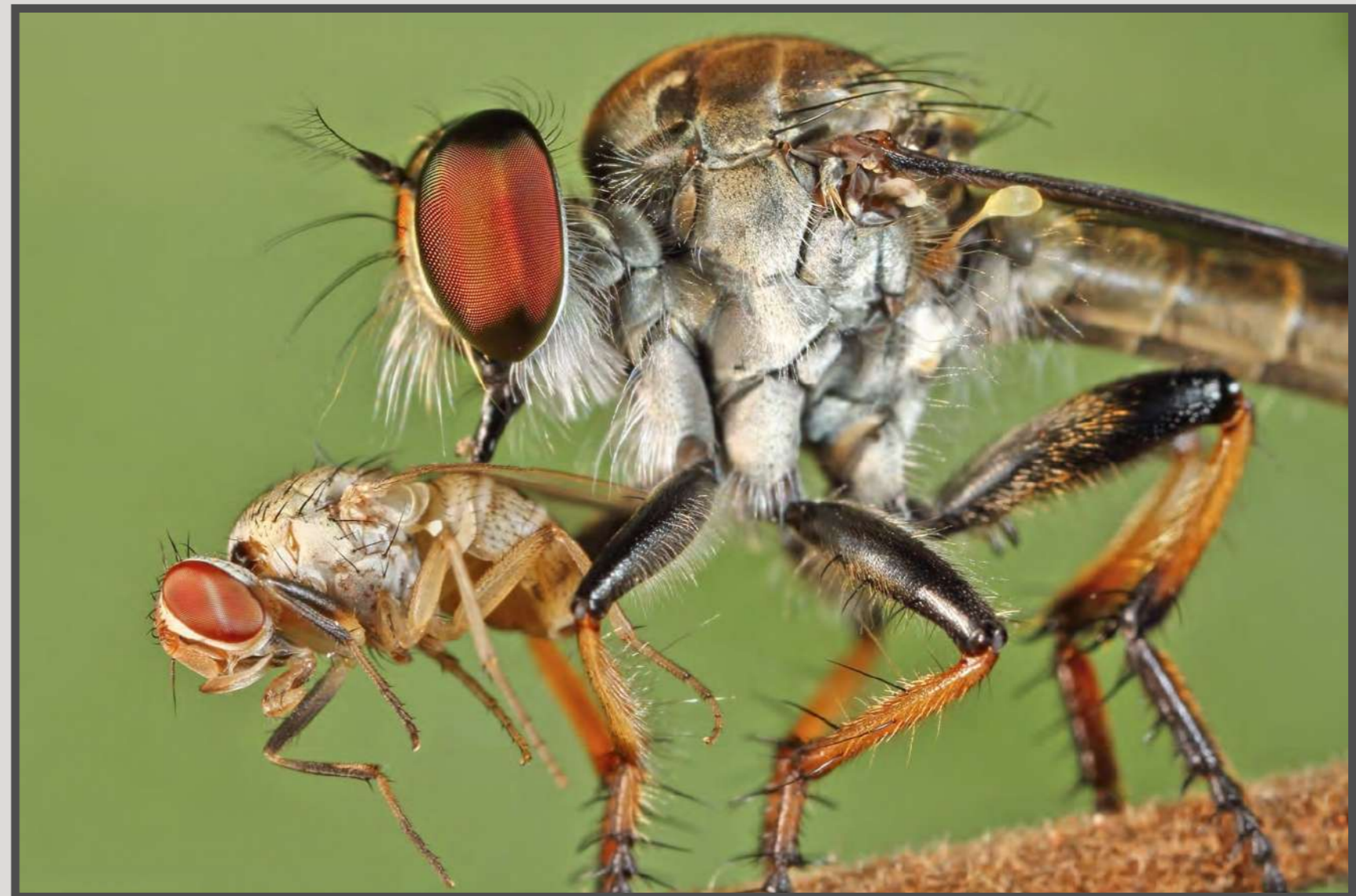
I was wandering in my garden and I noticed a Cellar spider carrying her egg sack. I was mesmerized for a moment and grabbed it through my camera.

Canon 5d mark3
 Canon mpe 65mm
 f14, 1/200
 ISO 200

Robberfly with prey

One day I was on search of a robberfly to take a picture, when all of a sudden I noticed this one which had just captured a fruit fly. It took it and started eating. I just had to capture this shot fast so that moment of natural behaviour was captured.

Canon 5d mark3
 Sigma 105mm
 f11, 1/200
 ISO 320



**Jumping
spider**

Adult male
jumping spider
posing; this is one
of the most
colourful jumping
spider I have ever
seen and I was
lucky to capture
this beauty.

Canon 5d mark3
Canon mpe
65mm
f11,1/200
ISO 200





Potter wasp

For a long time I had wanted to take a picture of this potter wasp. While it was making its nest just next to my bed nature gifted me with this opportunity.

Canon 5d mark3
Sigma 105mm
f11,1/200
ISO 125



Pupa

Jewel-like of a
Common crow
butterfly pupa.

Canon 5d mark3
Sigma 105mm
f11,1/160
ISO 125

**Leaf cutter
bee**

I noticed this leaf
cutter bee had
started building
its nest in a
pipeline. It's so
nice to see how
they cut the leaf
with precision
and arrange it
to build the
perfect nest.

Canon 5d mark3
Sigma 105mm
f10,1/200
ISO 400





Cuckoo wasp

This wasp is called metallic wasp or cuckoo wasp because it puts its eggs on another wasps nest. It's beautiful to see the wasp waiting for the wasp to go on a trip and lay its eggs quickly. Sometimes it fights with potter wasps or other wasps and lays its eggs...

Canon 5d mark3
Canon mpe 65mm
f11,1/200
ISO 400



Praying mantis

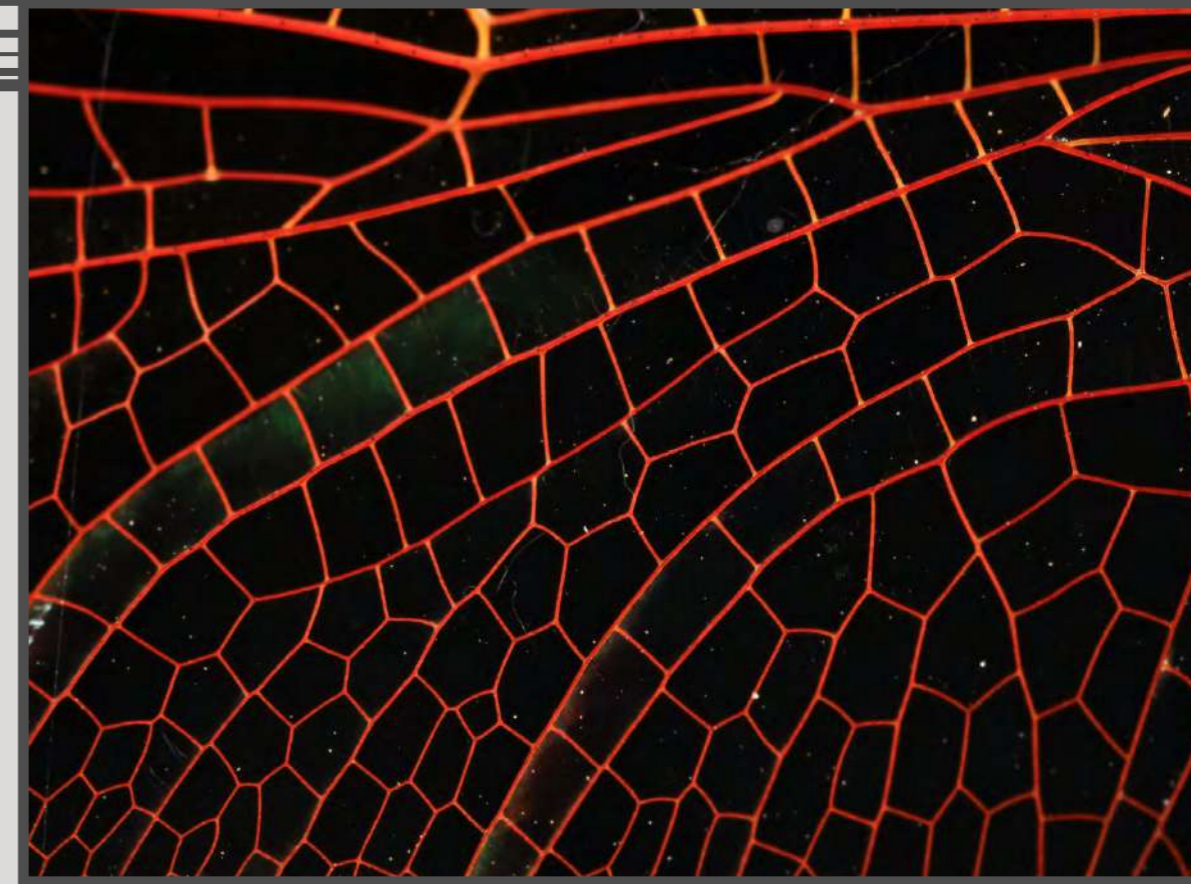
During a beautiful morning, sun just started shining, a Praying mantis started its early walk on the grass, its like it's granting all the wishes of the dewdrops during this walk.

Canon 5d mark3
Sigma 105mm
f2.8,1/1250
ISO 500

Dragonfly wing detail

The only insect that flies like a helicopter is a dragonfly. Even when it stands it flaps its wings for take off. I'm always fond to take a close up of their marvelous wings.

Canon 5d mark3
Canon mpe 65mm
f11,1/200
ISO 500



Jumping spider

Taking jumping spider pictures gives me a thrill every time. I found this jumping spider during my photo walk and took this beautiful picture.

Canon Eos 550d
Canon mpe 65mm
f13,1/200
ISO 200



**Morning
landscape**

During a beautiful sunny morning I saw the grass surrounded by dewdrops. For insects this must have looked like a fantasy world...

Canon 5d mark3
Sigma 105mm
f2.8,1/2500
ISO 200

Dandelion

After finishing my every day's work with macros I saw this beautiful sunset behind the dandelion flower.

Canon Eos 550d
Sigma 105mm
f5,1/800
ISO 500



Lacewings eggs

Nature is always amazing and full of surprises, when I saw the lacewing eggs over the plant and sunset as a background I realized a parasitic wasp was climbing one of the stalks.

Canon Eos 550d
Canon mpe 65mm
f7.1,1/125
ISO 400

Lynx spider

The eggs of a lynx spider started hatching. For the mom and me it was a very ecstatic moment!

Canon 5d mark3
Canon mpe 65mm
f10,1/200
ISO 400



**Moth wing
detail**

A moth was flying around in my garden; I was trying to take a picture, it gave me more time to take more shots so I got the opportunity to go more near to it.

When I saw the details of its wings I was astonished and took this image.

Canon 5d mark3
Canon mpe 65mm
f11,1/80
ISO 400

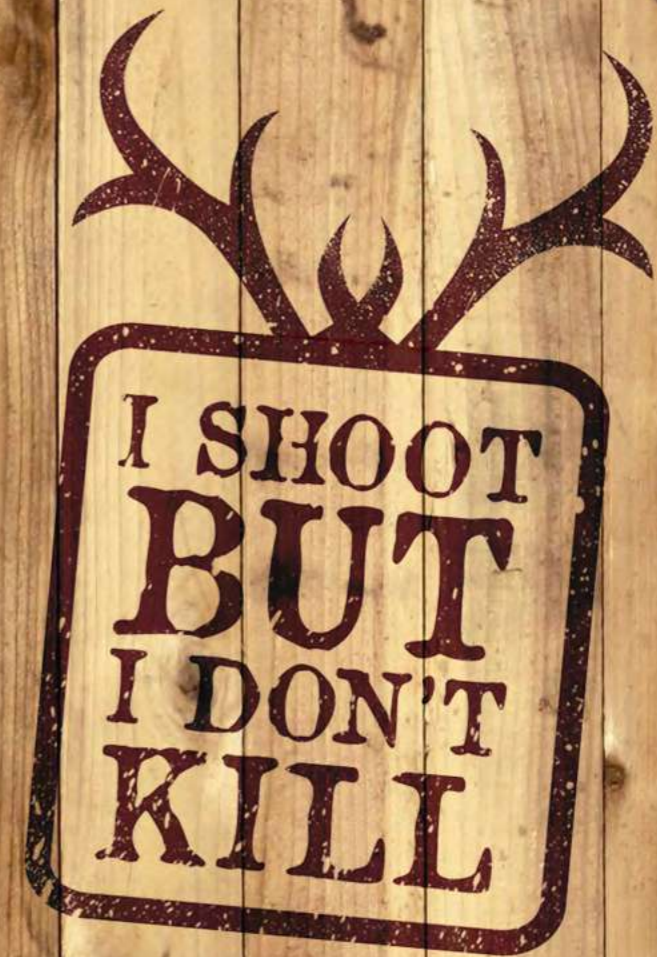




Raindrops

On a rainy day I took this beautiful refraction picture by placing the yellow flower to capture the shot.

Canon 5d mark3
Canon mpe 65mm
f5,1/500
ISO 5000



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THE SAND TIGER SHARKS OF NORTH CAROLINA

PEACEFUL OGRES
OF THE DEEP



Underwater photographer and conservationist Tanya Houppermans reveals the spectacular beauty and tragic plight of the misunderstood *Carcharias taurus*

TEXT AND PHOTOS
BY TANYA HOUPPERMANS
www.BlueElementsImaging.com

■ A Sand tiger shark
Carcharias taurus is
surrounded by spade fish
and small bait fish in the
waters off of North Carolina.



In the summer of 2009, I saw my first Sand tiger shark. I was a new diver, only having been certified six months prior, and I was off the coast of Morehead City, North Carolina to earn my Wreck Diver certification. As my instructor and I inched forward into the wreck of the tanker *Aeolus*, we reached an open area. There in front of us were six Sand tiger sharks, lazily circling inside the wreck, seemingly unfazed by the appearance of the two strangers in their midst.

I was immediately struck by the dichotomy between the sharks' appearance and their behavior. Here were these ferocious-looking animals with rows upon rows of jagged teeth jutting from their jaws, yet there was nothing even remotely aggressive about them. Their demeanor was calm, almost lethargic. Although it was clear that they were watching us, they did not act nervous or skittish. As my instructor and I slowly made our way through the wreck, one of the Sand tigers gently brushed up against my arm. I felt no fear, just complete and utter awe. And I quickly realized that these were not the vicious monsters so often portrayed by the media. I was fascinated, and I decided in that instant that I wanted to come back and spend more time with them. These encounters with Sand tiger sharks led to my picking up a camera for the first time in hopes of changing the public's negative perceptions about sharks

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Sand tigers come together in large groups off the coast of North Carolina during their annual migration along the east coast of the U.S.



through my images. Eventually I left my corporate job to become a full-time underwater photographer and shark conservationist, all from being inspired by those first dives with the Sand tiger sharks of North Carolina.

The Sand tiger shark *Carcharias taurus*, also known as Grey nurse or Ragged-tooth shark, is a migratory shark living in warm coastal areas worldwide, with the exception of the eastern Pacific. They prefer shallower waters ranging in depths from 5-620ft (1.5-189m) where they feed on small bony fish, crustaceans, squid, and stingrays. Adult Sand tigers grow to 6.5-10.5ft (2-3.2m) and weigh 200-350lbs (91-159kg). Juvenile Sand tigers are sometimes preyed upon by larger shark species, while adult Sand tigers have no

predators except, of course, humans. Sand tigers are unique among all shark species in that they control their buoyancy by swimming to the surface to gulp air into their stomachs. The air acts like an internal balloon, allowing them to hover motionless in the water column where they can seize prey as it swims by. Sand tiger sharks are able to remain motionless and still breathe by using their cheek muscles to pump water over their gills, known as buccal pumping. They are able to switch back-and-forth at will between buccal pumping and ram ventilation, which is where they swim forward to push water over their gills. A female Sand tiger shark will carry about one hundred eggs inside her body until they hatch, then give birth to live young. But before the live birth occurs, the ultimate "survival of the fittest" takes place. As the

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Far left: the wreck of the tanker Atlas is a favorite hangout for Sand tiger sharks. Right, thousands of small bait fish surround a Sand tiger as it swims past the conning tower of the wreck of the German submarine U-352.



■ A lone Sand tiger glides over the sea floor next to the wreck of the German submarine U-352, which lies in 120ft of water 30 miles off the coast of North Carolina.

Right, an underwater photographer takes a moment to admire a Sand tiger shark as it passes overhead. Far right, Sand tigers do not have to continually swim to breathe. Even when resting on the sea floor, they can still breathe by using their cheek muscles to pump water over their gills.



eggs start to hatch, the developing Sand tiger embryos will eat the unhatched eggs, and then actually start to devour each other! While it is not unheard of for other species to eat unhatched eggs in utero, the Sand tiger shark is the only member of the entire animal kingdom known to carry live embryos that will consume their siblings before birth. By the end of the nine to twelve month gestational period, only two pups are left, the rest having been eaten. Sand tigers only give birth every two to three years, making theirs one of the lowest reproductive rates of all the sharks. The mother Sand tiger does not tend to her babies after birth; the young Sand tigers are on their own, already knowing how to catch and eat live prey as they begin their journey to adulthood.

The waters off of North Carolina are known as "The Graveyard of the Atlantic" for the nearly 1,000 shipwrecks that line the coast. These wrecks date back to the 16th century and are the result of the many hazards sailors have encountered in the area including strong currents, shoals, severe storms, and marine warfare from the Civil War through World War II. The shipwrecks create artificial reefs that provide an outstanding environment for life to thrive, including the sand tigers that frequent the wrecks. No one is quite certain why the Sand tigers tend to congregate around the wrecks, although several theories have been put forth including the sharks using wrecks as navigational aids during their coastal migration, or perhaps they enjoy the abundance of food sources in the smaller

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Sand tiger sharks are a ■ critical part of a healthy ocean ecosystem in the waters off of North Carolina.



fish that also live around the wrecks. North Carolina is one of the few places in the world where scuba divers can enjoy the thrill of sharks and shipwrecks in the same dive. Although Sand tiger sharks are found in the waters of North Carolina year-round, the summer offers the best conditions with warm water (temperatures at depth average 80°F in the summer, or 27°C), and visibility reaching 80-100ft (24-30.5m) or more. The boat rides out to the dive sites can be long, usually one to three hours, but certainly worth it after descending into the warm, clear water to the sight of a shipwreck emerging in the blue. After reaching the wreck, divers usually first notice shadows moving slowly in their field of view. A closer look reveals the Sand tiger sharks, leisurely drifting by, almost sluggish in appearance. Sand tigers

are quite tolerant of divers, allowing them to come into close proximity to get a better look or take a photograph. But approach too quickly or make a sudden movement, and a diver is likely to be startled with a sudden loud *boom* and a compression wave of water from the flick of the Sand tiger's tail as it speeds away.

While the sight of a handful of Sand tigers on a shipwreck would be considered a great day in the water for most any diver, those lucky enough to dive North Carolina in the July/August timeframe are in for the ultimate show. For reasons we don't quite yet understand, Sand tigers by the dozens tend to aggregate around the wreck of the cargo freighter *Caribsea* during mid-summer. Numbering 60-100 or more, the Sand tigers slowly cruise together in mid-



Far left, author Tanya Houppermans in action among a school of Sand tigers (photo by Mike Gerken); left, very few places in the world offer shipwrecks and sharks in the same dive. Here, Sand tiger sharks swim around and inside the wreck of the Spar.



■ The wreck of the U.S. Coast Guard Cutter Spar is a favorite hangout for Sand tigers.

water, around the 45-65ft (14-20m) range. Interestingly, the overwhelming majority of these Sand tigers are female, with many being pregnant. Do the female Sand tigers give birth nearby? Where are the male Sand tigers? We simply don't know, although research is currently underway to try to answer these and many more questions about Sand tiger sharks. In the meantime, summer divers in North Carolina have the honor of witnessing one of the most awe-inspiring sights nature has to offer as Sand tiger sharks surround them as far as the eye can see.

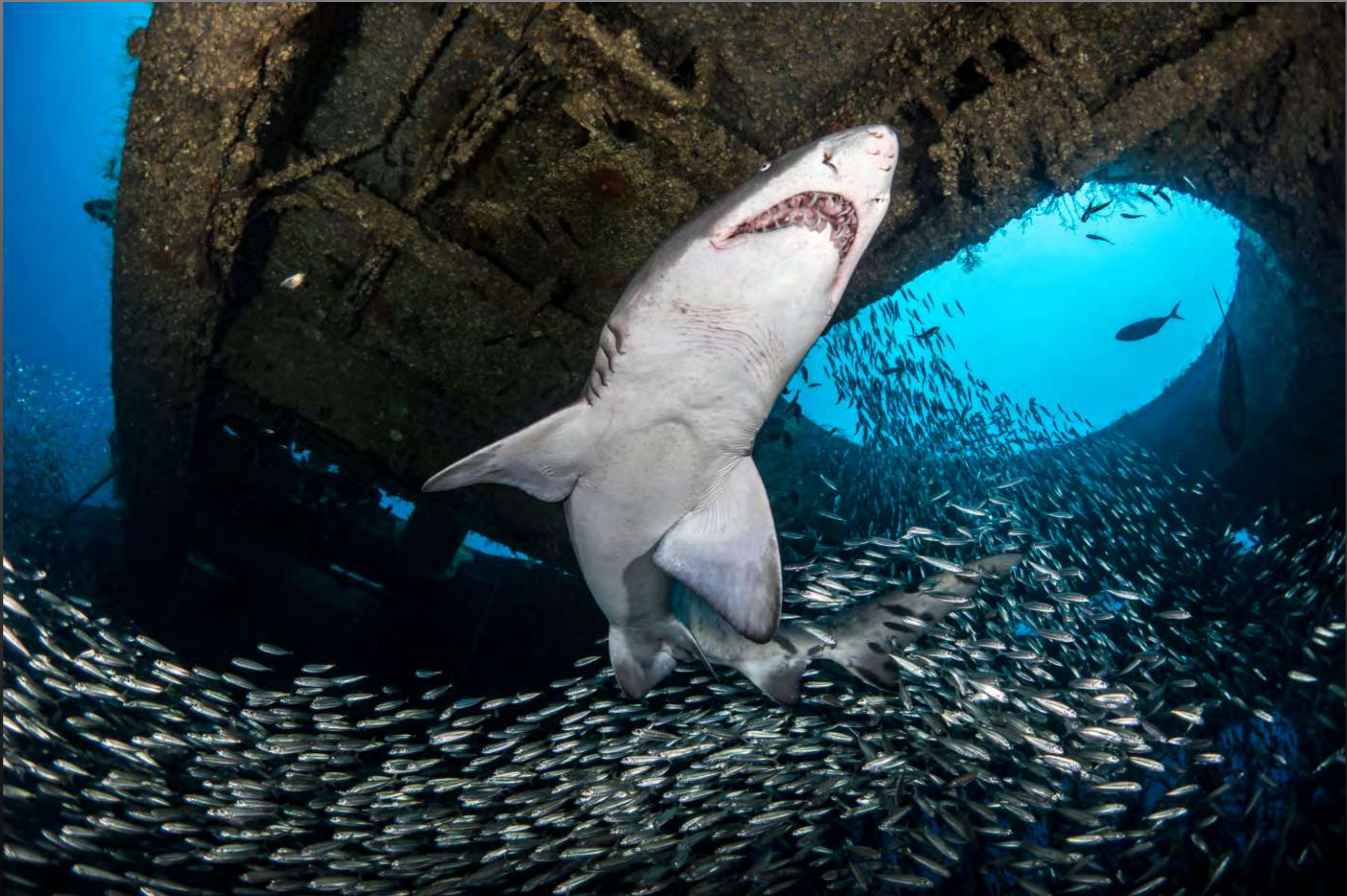
Sand tiger sharks have been protected in U.S. waters since 1997, and all states from Florida to Maine along the east coast of the U.S. have banned the retention or possession of Sand tigers. These sharks were heavily exploited in the 1980s and 90s, when populations fell by 75% due to commercial and recreational overfishing. Their numbers in U.S. waters have improved slightly since gaining protected status, but Sand tigers are still listed as "Vulnerable" on the International Union for the Conservation of Nature Red List of Threatened Species. The odds are stacked against Sand tiger populations recovering more quickly due in large part to the nature of their biology. Sand tigers take several years to reach sexual maturity - six to seven years for males and nine to ten years for females. And since they have a long gestational period of nine to twelve months, only giving birth to two pups at a time, any recovery of Sand tiger populations is going to be a slow process. Even with legal protections in place, Sand tiger sharks still face daily threats from people. In my own experience, I have not been on a single dive with Sand tiger sharks where I have not seen some form of negative impact on them from humans. It is



■ A Sand tiger swims under thousands of small bait fish on the wreck of the Caribbean.



Every year around mid-summer, huge aggregations of Sand tiger sharks can be found near the wreck of the Caribsea.



■ A Sand tiger swims through a river of bait fish inside the wreck of the Aeolus. Details of Tanya Houppermans' next dive expedition to shoot Sand tiger sharks can be found at <http://www.blu-elementsimaging.com/NorthCarolina2017>

not at all uncommon to see Sand tigers with hooks imbedded in their jaws, some trailing several feet of fishing line. But this is nothing compared to the two worst cases of harm to Sand tigers that I have personally witnessed. Last year I sighted a female Sand tiger shark with fishing line wrapped around her torso. The fishing line was so tightly embedded that it had cut nearly an inch into her skin. She was a small shark, so it was clear that as she was growing, the fishing line was cutting deeper and deeper into her skin. My dive buddy and I hoped to be able to cut the line away, but she was frightened and quickly swam away. And just a few months ago I witnessed a tragedy that still haunts me. As I swam to the bow of the wreck of the *Caribsea* I saw a Sand tiger lying on the sea floor. It was quickly apparent that something was wrong. She was curled up (most sand tigers will lie flat on the sea floor) and was only ventilating through her left gill. As I slowly approached, she didn't move at all; she just kept staring at me. Then it became obvious what had happened as I noticed a fresh wound on her upper neck region. She had been hooked (the line was still in her mouth), but instead of cutting the line and simply letting her go, whomever hooked her then plunged a sharp object through the back of her head that must have severed part of her spine. She was then thrown back into the sea where she came to rest under the bow of the wreck. She couldn't move and she couldn't eat. There was nothing we could do for her. We know that she lay there for at least two days before she wasn't seen anymore. The loss of a single sand tiger, especially a female of breeding age, is devastating to their populations, and also heartbreaking for those of us who care deeply about these sharks. The good news is that with the implementation of protection measures in the U.S. for Sand tiger sharks, they still have a fighting chance to come back from the brink of extinction. Current research is being conducted

to determine where they mate and give birth, what their migratory patterns are, and the extent to which their populations are rebounding. This information will then be used to influence laws and regulations pertaining to recreational and commercial fishing off the east coast of the U.S., hopefully leading to more protection not just for the sharks, but also for the areas they frequent. In addition, Sand tiger sharks are helped through the efforts of numerous shark conservation organizations both locally and globally that educate the public about the importance of not just Sand tigers, but of all sharks in maintaining healthy ocean ecosystems. In North Carolina several local dive operators and aquariums conduct frequent community outreach and educational programs to involve the public in protecting the marine life in the waters off the coast. When people become informed about the Sand tiger sharks living offshore, they usually stop fearing them, and start wanting to protect them instead.

I am still just as fascinated by Sand tiger sharks as I was when I made that first dive with them seven years ago. Every time I descend into the waters of North Carolina, I look forward to seeing them again, just like visiting old friends. I feel very fortunate to be able to share their lives through my images. Sometimes those images show the good, such as a female Sand tiger carrying pups, or dozens of Sand tigers swimming together in harmony. And sometimes the images show the bad, as in the cruelty that humans have inflicted upon them. But together they all tell the story of a beautiful but misunderstood animal that deserves our respect and protection as a vital part of the marine ecosystem. And even though I've traveled the world photographing numerous shark species, I keep coming back to North Carolina to the Sand tiger sharks that first captivated me as a new diver.



■ An impressive backlit portrait of an adult Sand tiger shark *Carcharias taurus* as it swims under the sun through the clear blue Atlantic waters.



■ A Sand tiger is surrounded by a school of bait fish as it swims over the wreck of the tanker Papoose.

Another ■ stunning image of the Sand tiger shark schools which congregate every year - around mid-summer - near the wreck of the Caribsea.





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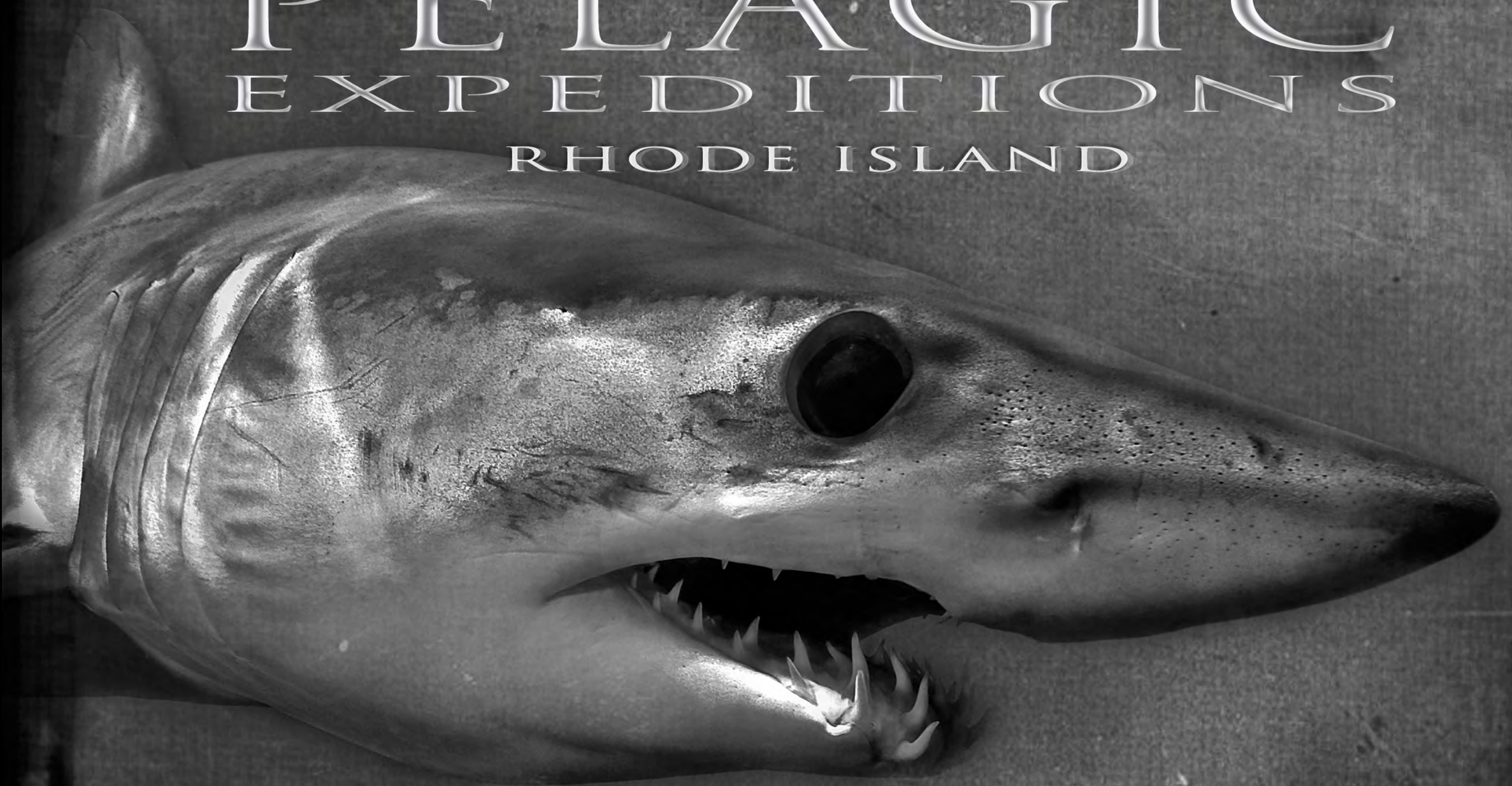


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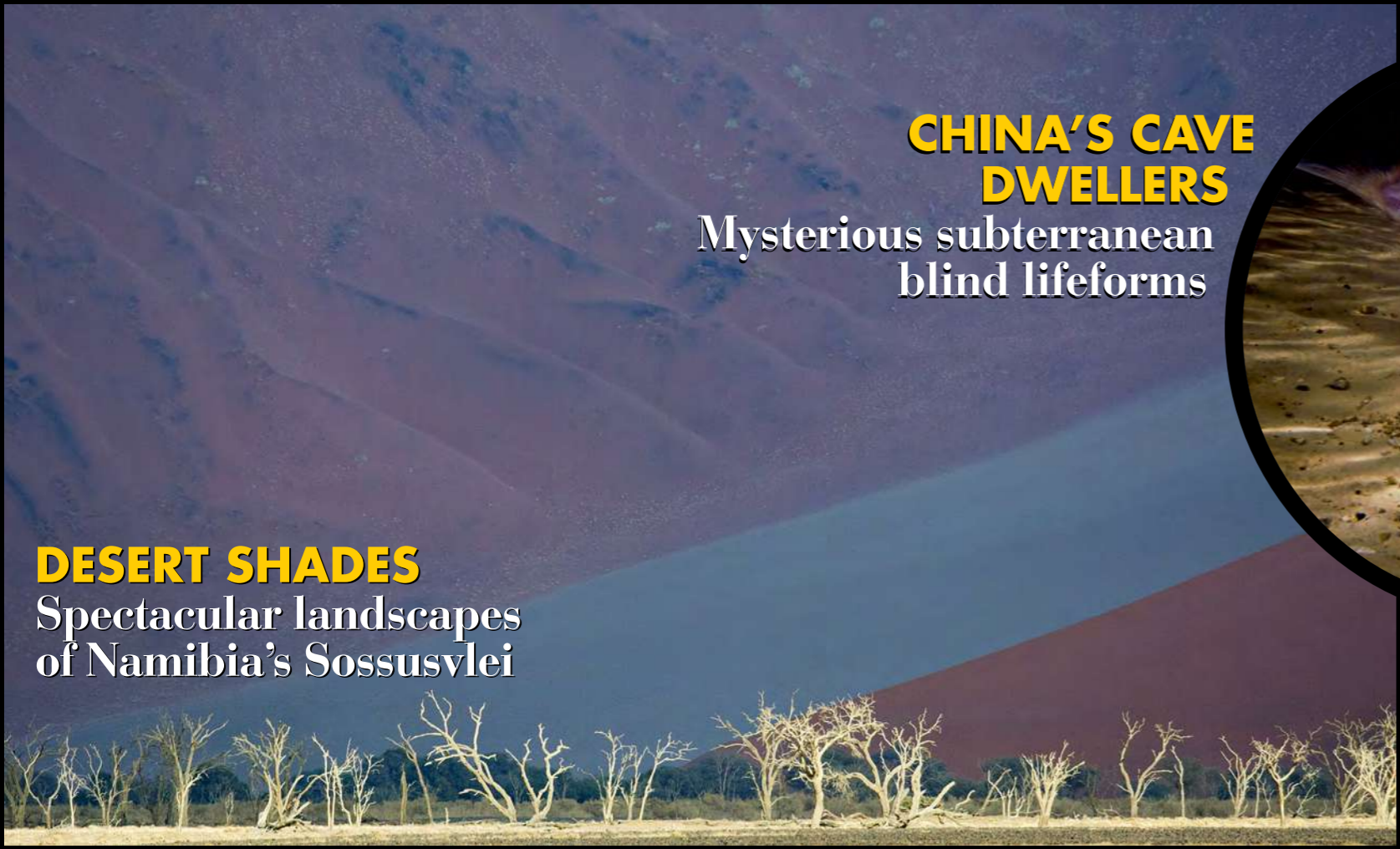


The Parting Shot

Indian herpetologist Vishal Santra, founder and executive Member/Research & Conservation Head at Simultala Conservationists, tells us about a rare species he encountered and photographed in Arunachal Pradesh: the Medo pitviper or Motuo bamboo pitviper *Viridovipera medoensis*. "This beautiful and rarely observed montane species is found in Northern Myanmar (Burma), North East India (Arunachal Pradesh, Changlang District), West China (SE Xizang = Tibet) and possibly in Bhutan as well. It is green or bluish green above, yellowish white below, the two separated by a bright bi-colored red (below) and white

(above) ventrolateral stripe (in both males and females), which occupies the whole of the outermost scale row and a portion of the second row; males reach a total length of 671 mm, females 650. It is ovoviviparous (delivers live young) and it is a strictly nocturnal species. Primarily an arboreal snake, but sometimes comes down to forage for food or to cross a clearing. Also seen on the ground after heavy rainfall. In Arunachal Pradesh it hibernates in upright dead bamboo from late November to about May. The juveniles are more defensive than adults: it is slow but capable of fast strikes. Bite causes pain, swelling and local

tissue damage. May not be lethal, but bite from a large individual may turn nasty and could lead to life threatening complications if not treated. Renowned herpetologist, conservationists and educationist Gerard Martin was bitten by a medium sized individual when he was conducting research in the remote regions of Arunachal Pradesh. He had a serious tissue necrosis in his little finger which almost got amputated. Later doctors at Bangalore worked on the finger and performed skin grafting on it taking a piece of skin from under his arm. He does not feel anything in that finger as we last heard from him". ●



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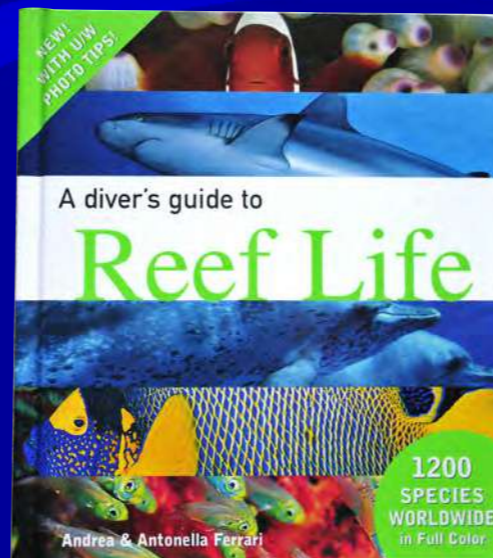
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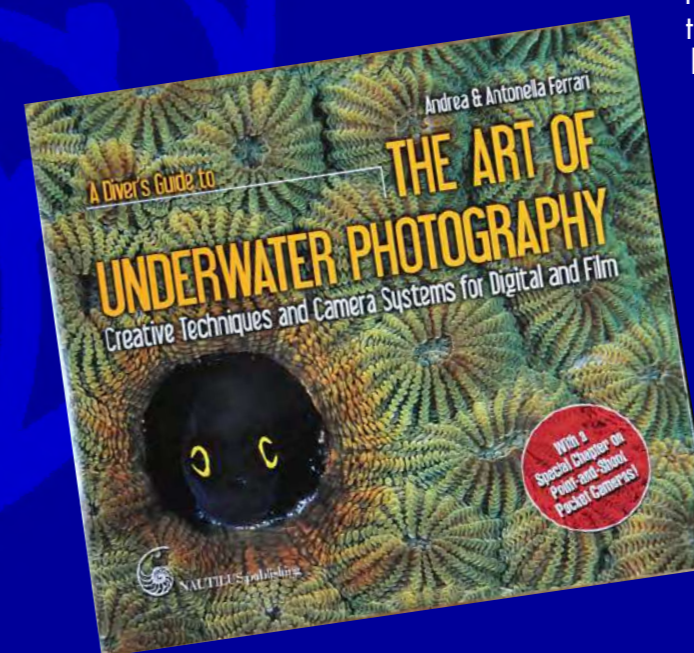
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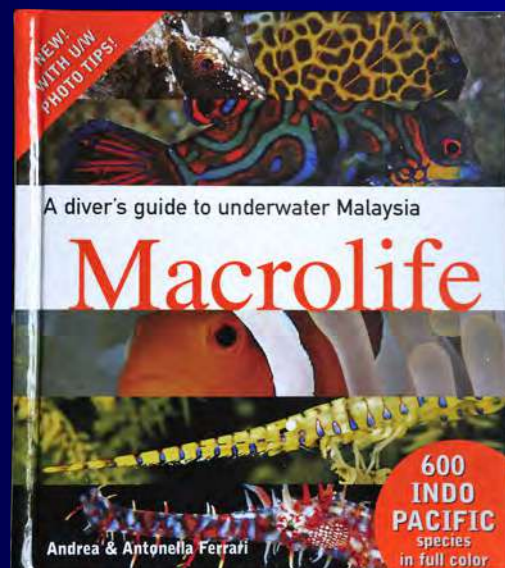
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